

DIPTERA FROM THE SOUTH-WESTERN UNITED STATES

Paper IV. Anthomyiidae¹

BY J. R. MALLOCH

Urbana, Illinois

For several years I have been making an exhaustive study of Anthomyiidae from North and South America and Europe, with a view to obtaining data upon which to base a reliable family, subfamily, and generic classification of the calyptrate Muscidae, and it was with this end in view that I undertook the work upon the present collection. The work was undertaken with the permission of Dr. S. A. Forbes, chief of the Illinois State Natural History Survey, and the material was studied in conjunction with that in the Survey collection, a few species from the latter collection being added where it was considered advisable to do so, in order to make the paper more complete and to supply comparative data or records.

[This is the fourth of the series of papers based on the material collected in Texas and New Mexico, in 1902, by H. L. Viereck and J. A. G. Rehn, on an expedition under the direction of The Academy of Natural Sciences of Philadelphia.

Included in this paper is material from California and Idaho, collected by E. T. Cresson, Jr., and from several other, mostly western, localities secured by various collectors. In the latter cases the collector's name, when known, is given within parentheses. In every case unless otherwise designated within brackets, the material studied is from, and the types of species from such material are in, the collection at The Academy of Natural Sciences of Philadelphia.

A key to the subfamilies of the Anthomyiidae will be found in the *Canadian Entomologist*, for 1917, page 406. *E. T. C., Jr.*]

¹ The previous papers may be found by the following references: No. 1, Trans. Amer. Ent. Soc., xxxii, p. 279; No. 2, Trans. Amer. Ent. Soc., xxxiii, p. 99; No. 3, Ent. News, xxvi, p. 448.

Subfamily PHAONIINAE

The species included in the subfamily as herein limited possess the following characters: Sixth vein not extending to margin of wing; hind tarsus without spine at base on ventral surface, except in a few species of *Pogonomyia* scutellum bare below; sternopleura with bristles 2:2, or 1:2, if the latter they are not in an equilateral triangle; propleura bare below humerus; calyptra unequal, the lower always larger than the upper.

Key to Genera Here Treated and Their Nearest Allies

1. Fourth vein curved forward at apex. 2
Fourth vein straight or almost so, never distinctly curved forward at apex. 5
2. Third vein bare at base; metathoracic spiracle with several long bristles along the lower margin which are difficult to see owing to their lying close against the covering of the spiracle. **Muscina** R.-D.
Third vein bristled at base; metathoracic spiracle without such bristles. . . 3
3. Prothoracic plate between the fore coxae with bristly hairs on its lateral margins; arista pubescent or bare. **Limnophora** R.-D., pt.
Prothoracic plate between the fore coxae bare. 4
4. Arista plumose; eyes in male narrowly separated above. . **Myiospila** R.-D.
Arista bare; eyes of male widely separated above. . **Bucephalomyia** gen. n.
5. Eyes of male separated by at least one-third the width of the head; arista in both sexes bare, much thickened to or nearly to middle; apical segment of abdomen in female with four stout curved thorns; anterior orbital bristles below level of base of antennae. . . **Tetramerinx** Berg
Eyes of male separated by less than one-third the width of head, or the species have not all the above characters. 6
6. Hind tibia with one long, outstanding bristle beyond middle on the postero-dorsal surface, rarely with a few additional smaller setulae basad of the bristle; hind coxae bare on posterior margin above.
Phaonia R.-D.
Hind tibia entirely without bristles on postero-dorsal surface. 7
Hind tibia with a number of bristles on postero-dorsal surface which are of almost equal lengths, or with one to two small setulae near base, if with one long bristle beyond middle the hind coxae have bristly hairs on posterior margin above. 11
7. Third vein bristly at base. **Mydaea** R.-D.
Third vein bare at base. 3
8. Hind coxae with bristly hairs at apices above. **Trichopticus** Rond., pt.
Hind coxae bare above at apices. 9
9. Eyes of male flattened above, the facets on the flattened part about five times as large as those on the lower half; fifth abdominal sternite with very large, deep U-shaped incision in posterior margin; genitalia of female without paired projecting processes (figs. 1 and 2).
Xenaricia gen. n.

- Eyes of male not flattened above, the facets usually slightly enlarged towards the upper margin; female genitalia not as above. 10
10. Prealar bristle present, sometimes small, if absent the arista is plumose.
Aricia² R.-D., pt.
 Prealar bristle absent; arista pubescent or bare. . **Limnophora**² R.-D., pt.
11. Hind coxae with a number of hairs on posterior margin above.
Trichopticus Rondani, pt.
 Hind coxae bare on posterior margin above. 12
12. Hind tibiae with several very long strong bristles on postero-dorsal surface; lower calypter not much larger than upper; lower supraorbital bristle in female directed forward or outward and usually very long; fore tarsi of both sexes without long, slender, isolated sensory hairs, the joints all with erect fine hairs ventrally, in the female with a number of longer hairs at apex on same surface; fore tibia with one to two long bristles at apex on ventral surface, which are directed apicad close to ventral surface of basal joint of tarsus. 13
- Hind tibia with at most a few weak bristles on postero-dorsal surface; lower calypter very much longer than upper; lower supra-orbital bristle in female weak, or absent, not directed forward; fore tarsi in both sexes with long, fine, isolated sensory hairs. . . **Aricia** R.-D., pt.
13. Apex of proboscis stout, without recurved pointed labellae.
Pogonomyia Pokorný
 Apex of proboscis with a pair of pointed recurved labellae. . **Drymeia** R.-D.

MYIOSPILA R.-D.

This genus has been considered as synonymous with *Mydaea* by Stein who retains in the latter all species that lack the calcar on the hind tibia. There are several genera lumped together by various authors who have used that character in separating the genera, and though *Myiospila* is more closely related to *Mydaea* sens. str., than are some of the other groups referred to, I consider it is inadvisable to sink it as synonymous with that genus until we know something of the immature stages of the latter.

Myiospila meditabunda Fabricius

1781. *Musca meditabunda* Fabricius, Spec. Ins., ii, 414.

One small male, Lagunitas Cañon, Marin County, California, March 29, 1908.

² The above genera are very closely related and each contains a mixture of forms which requires further subdivision; in fact the genera as at present constituted are not natural groups.

PHAONIA R.-D.

This genus as herein limited includes species which have a strong bristle on postero-dorsal surface of hind tibia beyond middle, the third vein bare at base, and not curved forward at apex, the hind coxae bare at apex above; in the female the lower supra-orbital bristle is weak, not directed forward, and the cruciate interfrontals are absent.

The genus is composite and must be redefined and the limits further restricted.

***Phaonia monticola* sp. n.**

Male and *Female*.—Black, shining. Interfrontalia of female and cheeks of both sexes brown. Thorax, when seen from behind, with three gray pruinose vittae on dorsum. Abdomen with a distinct black dorsal stripe and very poorly defined lateral checkering. Legs black. Wings slightly fuscous towards base and along veins. Squamae white. Spiracles black. Halteres with knobs yellow.

Male.—Eyes hairy, separated by less than width across posterior ocelli; parafacials in profile nearly twice as wide as third antennal joint, and about half as wide as height of cheek; mouth very much produced; vibrissae distinctly above mouth margin; arista plumose; palpi very long and slender. Thorax with four pairs of posterior dorso-centrals; presutural acrostichals not setose; sternopleura with three bristles; hypopleura hairy above, in front of spiracle. Abdomen elongate ovate; fifth sternite deeply excised in center. Fore tibia not longer than fore tarsi, usually with one to two weak, hair-like, posterior bristles on middle, the inner or ventral surface with dense erect hairs, which become longer on apical half, the longest at least equal in length to diameter of tibia; mid femur with rather dense bristly hairs on basal half of antero-ventral surface, the longest about equal in length to portion of femur upon which they are situated; the postero-ventral surface with three to five long, strong bristles on basal half; mid tibia with two to three antero-dorsal, two to four postero-dorsal, and two to three posterior bristles, the latter two rows forming an irregular series which might be considered as an irregular double posterior series; hind femur with a continuous series of long, strong bristles on antero-ventral surface, and four to six strong, but short, bristles, on basal half of postero-ventral surface, none of which exceed in length the diameter of femur; hind tibia slightly curved; antero-ventral surface with two to four weak bristles; antero-dorsal surface usually with four bristles, one pair near base and another about middle; anterior and antero-dorsal surfaces each with a regular series of erect hairs, the longest of which is about half as long as the bristles; in addition to the calcar there is a slender bristle near base on postero-dorsal surface. Costal thorn weak; outer cross-vein oblique, slightly curved.

Female.—Front one-third the head-width; orbital and ocellar bristles very strong; orbits with numerous long hairs, some of which are over half as long as the bristles; profile similar to that of male, differing in having the portion below vibrissa almost vertical and about as long as antenna. Apical abdominal segment without thorns. Chaetotaxy of legs as in male, the small bristly hairs on hind tibia less numerous. Length, 7.5—8.5 mm.

Type.—♂; Top of Las Vegas Range, New Mexico, June 24, [A. N. S. No. 6192]. *Paratypes*.—2♂, 1♀; Beulah, New Mexico, top of range, same date.

This species is most closely related to *brunneinervis* Stein, but that species differs in having the fore tibia without the short erect ventral hairs, the mid femur with long bristles among the hairs on basal half of antero-ventral surface, the bristles on postero-ventral surface of hind femur longer than diameter of femur, and the hind tibia with a few scattered bristly hairs near middle, instead of one bristle near base.

***Phaonia parviceps* sp. n.**

Female.—Black, almost glossy. Head black; interfrontalia brownish, opaque; ocellar triangle and orbits glossy, the latter on their lower half, the entire face, and cheeks with whitish pruinescence; antennae and palpi black. Mesonotum with slight whitish pruinescence, which, when the thorax is viewed from behind, gives to the dorsum a quadrivittate appearance. Abdomen less distinctly pruinose than thorax, and with very faint indications of a black dorso-central vitta. Legs including coxae yellow, tarsi slightly infuscated. Wings clear, veins brown, yellow at bases. Calyptra and halteres whitish yellow.

Eyes with faint pubescence; frons at vertex about one-fourth the head-width, becoming broader in front; ocellar triangle extending slightly beyond middle of interfrontalia; orbit at apex of triangle one-third as wide as interfrontalia; ocellar bristles very strong, widely divergent; orbits each with five strong bristles, the one nearest antennae longest, and numerous short setulose hairs; antennae reaching almost to vibrissae, third joint over three times as long as second, slightly angulate at apex on upper side; arista plumose, the longest hairs slightly longer than width of third antennal joint; facial orbits linear in profile; cheeks very narrow, not higher than width of third antennal joint, the lower margin with a series of long bristles above which are a few weak hairs; vibrissal angle very slight, not much above lowest level of cheek, the vibrissae very strong, slightly longer than face. Thorax with three pairs of postsutural dorso-central bristles; presutural acrostichals four-rowed, the outer series on each side strongest; prealar bristle minute; hypopleura bare. Third and fourth (visible) abdominal segments each with discal bristles, the series on posterior margin of third segment very strong, that on fourth much weaker; apical segment without thorns. Fore tibia with one posterior and

two antero-dorsal bristles; mid femur with two to three weak bristles at base on antero-ventral surface and five to six longer bristles on postero-ventral; mid tibia with three bristles on posterior surface; hind femur with two to three weak bristles on basal half of postero-ventral surface, and a series of bristles on antero-ventral, the apical three to five much stronger than the others; hind tibia with two antero-ventral and two antero-dorsal bristles; the preapical postero-dorsal bristle (calcar) not noticeably longer than upper antero-dorsal. Wing-veins except costa bare; costal thorn of moderate length; outer cross-vein slightly curved; apical sections of veins three and four slightly divergent. Length, 6.5 mm.

Type.—♀, Yosemite Valley, California, May 22, 1908, [A. N. S. No. 6193].

This species belongs to the same group as *P. palpata* Stein, a European species, but differs in color of legs, etc. I have seen no very closely allied North American form.

***Phaonia nigricauda* sp. n.**

Male and Female.—Fulvous, glossy. Head blackish brown, back of head grayish pruinose, frontal orbits and face with whitish iridescent pruinescence; antennae and palpi brown, second joint of former and base of latter paler. Thorax unmarked. Abdomen with apical half conspicuously blackened. Legs fulvous, tarsi slightly infuscated. Wings clear, veins pale brown. Calyptra and halteres yellow.

Male.—Eyes with very short pubescence, separated at narrowest part of frons by a distance nearly or quite equal to width across posterior ocelli; antennae reaching to upper mouth margin, third joint over twice as long as second; arista long and slender, plumose, the longest hairs about equal in length to width of third antennal joint; parafacials almost linear in profile; cheek about as high as width of third antennal joint. Presutural acrostichals four-rowed, the outer series on each side strongest; postsutural dorso-centrals three; hypopleura bare; posterior spiracle small, subtriangular. Abdomen elongate, slightly tapered at apex, the last two segments with postmarginal and discal bristles; fifth sternite with a deep, broad, central excision. Fore tibia sometimes unarmed, at times with an anterodorsal bristle near middle; mid femur with four to five long slender bristles on basal half of postero-ventral surface; mid tibia with two to four posterior bristles; hind femur with a series of widely spaced bristles on antero-ventral surface, and another, weaker, on basal half of postero-ventral surface; hind tibia with one to two weak antero-ventral and two stronger antero-dorsal bristles; calcar short and stout. Wing-veins bare; outer cross-vein bent; apical sections of veins three and four sub-parallel.

Female.—Differs from the male in having the frons one-third as wide as head, the fore tibia sometimes with an antero-dorsal and a posterior bristle, and the mid and hind femoral bristles weaker and less numerous. Length, 6 to 7 mm.

Type.—♂; Redwood Cañon, Marin County, California, May 17, 1908, [A. N. S. No. 6194]. *Paratypes*.—2♂, 3♀; topotypical; 1♀, Berkeley Hills, April 20, 1908; 2♂, 1♀, same locality, May 9, 1908; 1♂, Muir Woods, Marin County, May, 1908 (F. E. Blaisdell), all in California.

This species bears a striking resemblance to *Spilogaster fulva* Bigot, a species recorded under another generic name on a subsequent page of this paper and which occurred along with the type series.

I know of no closely allied North American species, the glossy fulvous thorax and abdomen readily separating it from any species known to me.

***Phaonia fuscicauda* sp. n.**

Male.—Yellowish testaceous, slightly shining. Head yellow, occiput with more than the upper half gray, pruinulent; third antennal joint brown except at base. Dorsum of thorax slightly gray pruinulent and with four indistinct brown vittae, the submedian pair with dark suffusion between them so that they appear almost like a broad median vitta. Abdomen with a medio-dorsal row of fuscous spots, the one on third segment most distinct, apex of third segment and whole of fourth fuscous, the large bristles on the last two segments with the base of each surrounded by a fuscous dot. Legs yellowish testaceous, tarsi slightly darkened. Wings clear, cross-veins conspicuously, but not very broadly, infuscated. Calyptra whitish. Halteres yellow.

Eyes conspicuously hairy, separated at narrowest part of frons by a distance equal to width of anterior ocellus; antennae reaching almost to mouth margin, third joint narrow, slightly dilated at apex, over two and one-half times as long as second; arista plumose, the longest hairs equal in length to width of third antennal joint; parafacials in profile narrower than third antennal joint; cheek slightly less than one-fourth as high as eye, marginal bristles irregular, moderately strong, none upwardly curved, a double series of hairs above bristles; proboscis very stout. Thorax with two to three pairs of widely placed presutural acrostichals and about eight series of hairs on same area; postsutural dorso-centrals four; sterno-pleurals three; hypopleura bare; posterior spiracle large, subtriangular. Abdomen broadly ovate; fifth sternite with a broad wedge-shaped excision. Fore tibia unarmed at middle; mid femur with nine to ten long hair-like bristles from base to beyond middle on postero-dorsal surface; mid tibia with two to three posterior bristles; hind femur with a complete series of rather short bristles on antero-ventral surface and another on basal half of postero-ventral; hind tibia with one to three antero-ventral, and two antero-dorsal bristles, calcar not very long; outer cross-vein at about its own length from inner; last section of veins 3 and 4 slightly divergent at apices, that of the latter about three times as long as preceding section. Length, 6 mm.

Type.—♂; Berkeley Hills, California, April 20, 1908, [A. N. S. No. 6195].

This species bears a striking resemblance to the pale variety of *Aricia lysinoë* Walker which occurs in the west.

ARICIA R.-D.

The characters that are used in the separation of this genus from others in the key on a previous page undoubtedly link together groups of species that are dissimilar in habitus and which are biologically distinct, but the further elucidation of the relationships cannot for various reasons be undertaken in the present paper.

Aricia latifrontata sp. n.

Male and female.—Black, shining. Head black, interfrontalia, face, and cheeks brownish, opaque, slightly whitish pruinose; ocellar triangle shining; orbits subopaque. Thorax with four black dorsal vittae, the spaces between these grayish pruinose. Abdomen with sparse whitish pruinoscence on dorsum, which is most distinct when viewed from behind, forming a central stripe and irregular patches on anterior angles and sides so that each segment appears to have two large subcontiguous irregular black spots. Legs black. Wings slightly grayish. Calyptra white. Knobs of halteres yellow.

Male.—Eyes bare; frons at vertex one-fourth as wide as head, slightly narrowed at apex of ocellar triangle and widened anteriorly; orbits narrow, each with six to eight strong bristles and a number of long bristly hairs; antennae shorter than face, third joint twice as long as second; arista plumose, the longest hairs at least as long as width of third antennal joint; parafacials in profile a little narrower than third antennal joint, and less than half as wide as height of cheek, the latter with numerous strong marginal bristles of irregular lengths and above them a number of short hairs; vibrissal angle not sharply produced, vibrissa very long and strong, with a few bristly hairs above it; proboscis short and stout; palpi long, slender. Presutural acrostichals represented by six to eight series of short setulose hairs; postsutural dorso-centrals four in number. Abdomen elongate, slightly tapered apically; dorsum with strong bristles both on discs and apices of segments; hypopygium small, retracted; fifth sternite with rounded post-marginal excision. Legs stout, strongly bristled; fore tibia with one posterior bristle at middle; mid tibia with two to three anterior, and three to five posterior bristles; hind femur with three to four bristles at apex on postero-ventral surface, the antero-ventral surface with a series of strong bristles from base to apex; hind tibia with four to six antero-ventral, two antero-dorsal, and three to five posterior bristles, the latter weaker than the others and rarely passing beyond middle of tibia, none of them representing the so-called "calcar." Costa with short spinules; costal thorn longer than inner cross-vein; outer cross-vein curved, at more than its own length from apex of fifth vein; veins 3 and 4 very decidedly divergent at apices.

Female.—Differs from the male in having the frons over one-third the head-width, the bristles of tibiae less numerous, those on posterior surface of hind pair usually one to three in number and confined to basal fourth, and the abdomen more conical, without any traces of dorsal spots. Length, 8 to 9 mm.

Type.—♂; Beulah, New Mexico, June 28, 1902, top of range, [A. N. S. No. 6196]. *Paratypes*.—1 ♂, 2 ♀; topotypical; 1 ♂, Bozeman, Montana, June 20, 1906. [Montana Exp. Sta.]; 1 ♀, same locality, June 12, 1903, elevation of 4700 feet. [Montana Exp. Sta.].

The above species differs from any North American form known to me in having a very broad frons in the male and in the deep black color.

***Aricia punctata* Stein**

1897. *Aricia punctata* Stein, Berl. Ent. Zeit., xlii, 182.

The collection contains one female from Clouderoft, New Mexico, June 16.

***Aricia lucorum* Fallen**

1823. *Musca lucorum* Fallen, Dipt. Succ., Muse., 55.

One male, Yosemite Valley, California, May 22, 1908; one male and two females, Redwood Cañon, Marin County, California, May 17, 1908; one male, Moscow, Idaho, June 2, 1908.

A widely distributed species both in North America and Europe.

***Aricia brevis* Stein**

1897. *Aricia brevis* Stein, Berl. Ent. Zeit., xlii, 180.

There is one female specimen in the collection which agrees with the type specimen in the Hough collection, except that it is smaller.

Locality; Beulah, New Mexico, June 28, 1902, top of range.

***Aricia poeciloptera* sp. n.**

Female.—Black, densely gray pruinose. Head black, densely gray pruinose; when viewed from in front there is a silvery quadrate spot visible on parafacials at base of antennae, which when viewed from the side becomes black; antennae black; palpi fuscous. Thorax with four rudimentary brown vittae on dorsum. Abdomen with two pairs of brown spots on dorsum; the larger bristles set in small brown dots. Legs black, apices of femora and all of tibiae reddish yellow. Wings clear, both cross-veins broadly infuscated. Calyptra white. Halteres yellow.

Frons slightly more than one-third the width of head at vertex, broader anteriorly; longest hairs on arista equal to basal diameter of arista; cheeks one-fourth as high as eye. Presutural acrostichals weak, irregularly four rowed; postsutural forso-centrals three; sternopleurals 2:2. Fore tibia unarmed at middle; mid tibia with two to three posterior bristles; hind femur with three to five strong bristles on apical half of antero-ventral surface; hind tibia with two to three weak antero-ventral bristles, and one strong one at middle on antero-dorsal surface. Costal thorn longer than inner cross-vein. Length, 5.25 to 6 mm.

Type.—♀; Cloudercroft, New Mexico, May 21, 1902. [A. N. S. No. 6197]. *Paratype*.—1 ♀, topotypical, May 23, 1902.

Closely allied to *obscurinervis* Stein, but that species has one to two bristles on the fore tibia, the hind femora with a strong bristle near middle of the postero-ventral surface, and the longest hairs of the arista equal in length to width of third antennal joint.

***Aricia lysinoë* Walker**

1849. *Anthomyia lysinoë* Walker, List. iv, 938.

I have a large number of specimens of this species from many localities in the United States, and after careful study of Stein's types I have concluded that *lysinoë* Walker, *amoeba* Stein, and *pubiceps* Stein are all one species. It is possible that *fulviventris* Bigot is also a synonym.

The species varies in color from black, with apex of scutellum fulvous (*pubiceps*) to entirely fulvous (*fulviventris*?). The abdomen is pale at base in *amoeba*, type-specimen, but along with the type are some Idaho specimens which have the thorax and abdomen fulvous with one to two pairs of fuscous spots on dorsum of abdomen. This pale form I have seen only from the west, Idaho and Oregon, and there is one specimen of it in the present collection taken in the Yosemite Valley, California, May 22, 1908.

XENARICIA gen. n.

Generic characters.—Eyes bare, almost contiguous above in male, with a flattened area above on which the facets are very much enlarged, about five times as large as those on the lower half of eye; eyes of female widely separated, the frontal chaetotaxy as in *Phaonia*; arista plumose; proboscis short and stout. Prealar bristle absent; hypopleura bare. Fifth abdominal sternite of male with a very large, deep U-shaped posterior excision;

genitalia of female without the pair of long apically rounded processes so noticeable in *Phaonia* (figs. 1 and 2). Hind tibia without bristles on the postero-dorsal surface.

Genotype, *Spilogaster fulvus* Bigot.

Xenaricia fulva Bigot

1885. *Spilogaster fulvus* Bigot, Ann. Soc. Ent. France, (6), iv, 289.

Two males and two females with data as follows: Redwood Cañon, Marin County, California, May 17, 1908.

BUCEPHALOMYIA gen. n.

This genus is erected for the reception of one species, which was originally described as *Tetramerinx femorata* by the present writer. From that genus it may be separated by the lack of thorns at the apex of the abdomen in the female, the distinctly convergent third and fourth veins in both sexes, the third also having several bristles at base both above and below.

I have not seen the male of *Tetramerinx unica* Stein, the genotype, but the female possesses characters that undoubtedly place it in the Phaoniinae and not in Coenosiniinae.

Bucephalomyia femorata Malloch

1913. *Tetramerinx femorata* Malloch, Proc. U. S. Nat. Mus., xiv, 603.

The female of this species has previously been unknown. It differs from the male in having no comb of short stiff bristles at base of ventral surface of hind femora.

Neither sex has any bristles on the ventral prothoracic plate between the fore coxae, a character that separates the genus from that section of *Limnophora* which has the third and fourth veins convergent apically and the former with bristles at base.

Locality: Alamogordo, New Mexico, one male, May 3; one female, May 5; one male, May 6, 1902.

TETRAMERINX Berg

This genus is represented in this collection by one species. I have only females of the genotype before me, but the specimen in this collection is undoubtedly different from these and is without question congeneric with them.

Generic characters.—Frons slightly over one-third the head-width, anterior orbital bristle slightly below base of antennae, the

latter elongate, third joint more than twice as long as second; arista bare, much thickened on basal half; presutural acrostichals two-rowed; postsutural dorso-centrals four; sternopleurals 1: 2; apical abdominal segment in female with four short, stout, curved thorns; third vein bare at base.

***Tetramerinx californiensis* sp. n.**

Female.—Black, slightly shining, densely gray pruinose. Head black, opaque, frons, face, orbits, and cheeks with dense, slightly brassy pruinoscence; antennae, proboscis and palpi black. Thorax with three narrow brown vittae, one along bases of acrostichals, the others along bases of dorso-centrals, the larger bristles on dorsum each set in a brown dot. Abdomen with an interrupted dorso-central brown line, a similarly colored spot on each side of dorsum of segments two and three, and a brown dot surrounding base of each bristle. Legs black, all of tibiae and apices of femora ferruginous. Wings clear, veins brown. Calyptera white. Halteres yellowish.

Each orbit with four strong bristles and a number of setulose hairs, the latter most numerous anteriorly laterad of the bristles; cheek about twice as high as width of parafacial in profile. Mid tibia with two posterior bristles; hind femur with two strong bristles on antero-ventral surface near apex; hind tibia with one antero-ventral, one postero-dorsal, and two antero-dorsal bristles. Venation similar to that of *unica* Stein. Length, 4.5 mm.

Type.—♀; San Francisco, California, May 27, 1908, (F. E. Blaisdell), [A. N. S. No. 6198].

The only other described species which belongs to the genus is *unica* Stein, which has the abdomen with central stripe only, and the legs black. The species I described as *Tetramerinx brevicornis* does not belong to this genus but to one of the segregates of *Limnophora*.

LIMNOPHORA R.-D.

There are several species of this genus in the collection, all the specimens being females.

***Limnophora narona* Walker**

1849. *Anthomyia narona* Walker, List, iv, 945.

This species is distinguished from all others known to me from North America, except *discreta* Stein, by the convergence of the third and fourth veins at their apices, and the presence of bristles on base of third vein and on the plate on venter of prothorax between the fore coxae. These characters in my opinion justify the generic separation of the species possessing them from the

others in *Limnophora*, but the exact status of the latter is uncertain, the genotype being an unrecognized European species. Several generic names have been used by authors for sections of *Limnophora*, but careful work will be necessary to establish the validity of any of these. The absence or presence of the prealar bristle is quite unreliable as a distinguishing character for this and allied genera.

Localities: twelve specimens, Berkeley Hills, Alameda County, California, April 11 and 20, 1908; six specimens, Yosemite Valley, California, May 22, 1908; one specimen, Highrolls, New Mexico, May 31, 1902.

***Limnophora discreta* Stein**

1897. *Limnophora discreta* Stein. Berl. Ent. Zeit., xlii, 204.

This species can be distinguished from the preceding one by the much less distinct forward curvature of the fourth vein.

One female in poor condition, Redwood Cañon, California, May 17, 1908.

***Limnophora aequifrons* Stein**

1897. *Limnophora aequifrons* Stein, Berl. Ent. Zeit., xlii, 205.

The female of this species is distinguished from any so far described from North America by the very narrow frons, which at vertex is much less than one-third the head-width.

Four females: Berkeley Hills, Alameda County, California, April 20, 1908; Redwood Cañon, Marin County, California, May 17, 1908; Alamogordo, New Mexico, May 8, 1902; and Troy, Idaho, May 31, 1908.

***Limnophora surda* Zetterstedt**

1845. *Aricia surda* Zetterstedt, Dipt. Scand., iv, 1476.

Four females are in collection with data as follows: two specimens, Redwood Cañon, Marin County, California, May 17, 1908; one specimen, Beulah, New Mexico, top of Las Vegas range, June 28, 1902; one specimen, Moscow, Idaho, June 2, 1908.

TRICHOPTICUS Rondani

There is only one specimen of this genus in the collection, a female, which differs so strikingly from any other known to me from this country that I have no hesitation in describing it as new.

Trichopticus maculiventris sp. n.

Female.—Black, slightly shining, with dense yellowish brown pruinescence. Head entirely black, the interfrontalia velvety black when seen from behind. Thorax with a blackish vitta on each side between acrostichals and dorso-centrals on anterior half of dorsum. Abdomen with a pair of rounded, widely separated black spots on dorsum of segments two and three, and a much less distinct dorso-central stripe or series of spots on all segments. Legs black. Wings clear. Calyptra and halteres orange yellow.

Eyes bare, separated by over one-third the width of head; ocellar triangle not carried to middle of frons; orbits one fourth as wide as interfrontalia, each with four bristles, the lower one strongest, the one above it directed forward, no hairs on orbits; cruciate bristles moderately strong; antennae stout, shorter than face, third joint nearly three times as long as second; arista with distinct pubescence; parafacials not visible in profile; cheek about one-eighth as high as eye. Presutural acrostichals strong, three pairs, with interspersed hairs; post-sutural dorso-centrals three, the anterior one weak, probably sometimes duplicated; sternopleurals 1: 1. Fore tibia unarmed at middle; mid femur with one strong bristle at middle on anterior side; mid tibia with one posterior bristle; hind femur with three to four short bristles on apical third of antero-ventral surface; hind tibia with two to three weak, short bristles on antero-ventral surface; preapical dorsal bristle rather far from apex. Third and fourth veins slightly convergent at apices; outer cross-vein slightly curved; lower calypter very little larger than the upper. Length, 3.75 mm.

Type.—♀; Troy, Idaho, May 31, 1908, [A. N. S. No. 6199].

This species differs from all others known to me in having no strong bristles on postero-dorsal surface of hind tibia, and in having the dorsum of the abdomen with paired spots. It bears a strong resemblance to species of the genus *Hydrotaca* in thoracic chaetotaxy, but no species of the Hydrotacinae has the bristles on apex of hind coxae above, as in this species.

POGONOMYIA Pokorný

Recently a revision of this genus by Dr. J. M. Aldrich appeared in *Entomological News*.³ The definition of the genus given in

³ 1918, p. 179.

that paper is, though vague, as good as any previously published, but does not mention the characters cited in the key to genera given on a preceding page of the present paper. A summary of the generic characters is as follows: Eyes bare, narrowly separated in the male, widely separated in the female, orbits bristled on their entire length in both sexes, *lower supraorbital in female directed forward*; parafacials broad in profile, sometimes as broad as

height of cheek, the latter with a broad, anteriorly rounded area which is covered with closely placed upwardly directed bristly hairs. Prealar bristle strong; *lower calypter not twice as large as upper*. Abdomen subcylindrical; fifth sternite almost transverse at apex; in female the abdomen is pointed at apex and the last segment has two moderately long, apically rounded processes which are armed with weak hairs. *Fore tarsi in both sexes without long, fine, isolated sensory hairs, in female with very noticeable erect, stiff hairs ventrally*, those at apices of joints longer than the others; hind tibia with several long strong bristles on postero-dorsal surface; *hind coxae bare at apex above*.

The subgenus *Pogonomyia* Pokorny is separable from *Neopogonomyia* S. and D., as shown in the key to the males presented herewith.

The most closely allied genus is *Drymeia* R., -D., which has the apical labellae of the proboscis elongated, sharp at apex, and recurved. This genus has been reported from North America but I have seen only European specimens.

Key to Species

Males

1. Mid tibia with one or more bristles on antero-ventral and always several on the anterior surface; basal joint of hind tarsi with an outstanding ventral bristle near base; arista with very short pubescence (*Pogonomyia* sens. str.).....3
- Mid tibia without bristles on antero-ventral surface, rarely with bristles on anterior or antero-dorsal surface only; basal joint of hind tarsi without an outstanding ventral bristle near base; arista with the pubescence usually as long as basal diameter of arista (*Neopogonomyia* S. and D.).....4
2. Thorax with four pairs of postsutural dorso-central bristles.
alpicola Rondani
- Thorax with three pairs of postsutural dorso-central bristles.....2
3. Eyes separated by a distance greater than width across posterior ocelli; spines on ventral surface of mid metatarsus longer than diameter of metatarsus, metatarsus thickened; antero- and postero-ventral surfaces of mid tibia each with seven to ten bristles.
spinitarsus Aldrich
- Eyes separated by a distance distinctly less than width across posterior ocelli; spines on ventral surface of mid metatarsus not as long as diameter of metatarsus, metatarsus slender; antero-ventral surface of mid tibia with one to two bristles, postero-ventral surface with four to five.
alpicola Rondani

4. Hind tibia with a series of short bristles of almost equal length upon antero-dorsal surface, none of which are distinctly longer than diameter of tibia; abdomen almost cylindrical, with a slender dorso-central black line; wings yellowish, the veins scarcely darker than the membrane.....**nitens** Stein
- Hind tibia with a series of bristles of irregular lengths, the longest very much longer than the diameter of the tibia; wings subhyaline or sub-fuscous, the veins black or dark brown.....5
5. Mid femur with a few bristly hairs on apical third of antero-ventral and postero-ventral surfaces, none of which exceed in length the diameter of the femur; hind tibia transverse at apex, not with a short blunt protuberance on ventral surface.....**similis** sp. n.
- Mid femur with a number of bristles on apical third of antero-ventral and postero-ventral surfaces, several of which greatly exceed in length the diameter of the femur; hind tibia with a short blunt protuberance at apex on ventral surface.....6
6. Postero-ventral surface of mid femur with five to seven long slender bristles on apical half, the longest of which is at least twice as long as diameter of the femur, basal half of same surface with minute hairs; antero-ventral surface with long bristles on apical three-fourths of its length; dorsum of abdomen pruinose and with poorly defined black central stripe; wings hyaline except at base.....**minor** sp. n.
- Mid femur with long bristly hairs in a rather closely placed series from base to near apex on postero-dorsal surface, those on basal half much longer than those on apical half; antero-ventral surface with four to five long, strong bristles on apical two-fifths; dorsum of abdomen not distinctly pruinose; wings infuscated, very noticeably so at base.
aldrichi sp. n.

Females

1. Mid tibia with one or more antero-ventral bristles.....2
- Mid tibia without antero-ventral bristles.....6
2. Thorax with four pairs of postsutural dorso-central bristles.....3
- Thorax with three pairs of postsutural dorso-central bristles.....4
3. Wings yellowish at base, the veins conspicuously so except at extreme base; pteropleura with one to two long erect hairs.
Arctic species not included
- Wings fuscous at base, the veins entirely black or fuscous; pteropleura bare.....**alpicola** Rondani
4. Mid femur without a continuous series of bristles on antero- and postero-ventral surfaces; arista with short hairs, the longest of which is equal in length to the basal diameter of the arista; frons over one-third as wide as head.....**latifrons** sp. n.
- Mid femur with a continuous series of bristles on antero-ventral surface and another, weaker, on the postero-ventral; arista with very short pubescence.....5

5. Mid metatarsus about ten times as long as its greatest diameter, the ventral bristles nearly erect, and almost as long as the diameter of the metatarsus.....**spinitarsis** Aldrich
 Mid metatarsus about eight times as long as its greatest diameter, the ventral hairs directed apicad, not near as long as diameter of metatarsus.....**alpicola** Rondani
6. Wings including the veins conspicuously yellow; mid femur with one short bristle near base and three to four near apex on antero-ventral surface.....**nitens** Stein
 Wings hyaline or slightly smoky, the veins sometimes yellowish.....7
7. Mid femur with one to two strong bristles beyond middle on antero-ventral surface, which are distinctly stronger than any that may be present near base of same surface; apical joint of fore tarsi as wide as the preapical at its apex.....**minor** sp. n.
 Mid femur with a bristle near base on antero-ventral surface, which is at least as strong as those near apex of same surface, the latter usually closely placed; apical joint of fore tarsi distinctly broader than preapical.....8
8. Apical joint of fore tarsi but little dilated; mid femur with one to two weak bristles near base on antero-ventral surface, and four to five at apex which are nearly equal in length.....**similis** sp. n.
 Apical joint of fore tarsi much dilated; mid femur with one to two very strong bristles near base and one to three much weaker bristles near apex on antero-ventral surface.....**aldrichi** sp. n

Pogonomyia alpicola Rondani

1877. *Pogonomyia alpicola* Rondani, Dipt. Ital. Prod., vi, 32.

This species varies in the chaetotaxy of the thorax, having three or four pairs of postsutural dorso-central bristles, differing in this respect from most species of the subfamily in which the number of these bristles is usually very constant.

There are thirteen specimens in this collection which agree so well with some examples of *alpicola* which I have from Europe that I have no hesitation in accepting them as that species.

Locality: Beulah, New Mexico, June 28, 1902, top of range. Three males, ten females.

Pogonomyia similis sp. n.

This and the following three species belong, which *nitens*, Stein, to *Neopogonomyia*, all four being submitted to me under the name *aterrima* v. d. Wulp by Dr. Aldrich, and included in his paper as such. In the paper referred to is given a very full description of the principal characters of the three species, including the color

and general chaetotaxy, with the exception of the mid femora and the form of the apex of the hind tibiae, which were overlooked by Aldrich. The distinctions of value in separating the species are listed in the keys on a preceding page and are constant throughout a long series of specimens.

I have refused to recognize the specific name *aterrima* as applicable to any of the species before me, because I do not know to which of the three it may be applied, if it can be applied to any. These mountain forms are not very widely distributed as a general rule and I prefer to consider the species all distinct from *aterrima*, which was described from Mexico, until the type specimen of that species can be more fully described.

Similis is rather larger than *minor*, equalling *aldrichi* in size, but is not so robust as the latter. The mid femora in the male is more robust than in either of these species and is not appreciably curved, and in addition to the difference in chaetotaxy of this pair of legs the apex of the hind tibia is transverse, without a slight but distinct protuberance on ventral surface.

The females of all three species are very similar but may be separated by the characters cited in the key. Length, 4.5 to 5.5 mm.

Type.—♂; Beulah, New Mexico, top of range, June 28, 1902, [A. N. S. No. 6200]. *Paratypes*.—6 ♂, 5 ♀, topotypical; 1 ♀, Claremont, California, [Illinois]; 1 ♂, Tennessee Pass, Colorado, July 25, 1917, (Aldrich), [Illinois]; 1 ♂, John Smith Ranch, Colorado, July 3, 1913, [U. S. Biol. Surv.]; Bozeman, Montana, June 20, 1906; 3 ♂, 1 ♀, same locality, July 3, 1902; 1 ♀, same locality, July 7, 1902; 1 ♀, same locality, May 30, 1916, [all Montana Exp. Sta.]; 1 ♀, Gallatin Mountains, Montana, 6000 feet alt., June 1, 1914, [Montana Exp. Sta.].

I have before me one male and two females taken in Newfoundland, which either belong to this species or to one very closely allied to it.

***Pogonomyia minor* sp. n.**

This species averages smaller (3.5 to 4.5 mm.) than the other two and appears to be the commonest Colorado and New Mexico form.

For characters see notes and keys under previous species.

Type.—♂; Beulah, New Mexico, top of range, June 28, 1902, [A. N. S. No. 6201]. *Paratypes*.—28 ♂, 18 ♀, topotypical; 1 ♂, 1 ♀, Tennessee Pass, Colorado, July 25, 1917, (Aldrich), [Illinois]; 3 ♀, Grant, Colorado, July 13; 1 ♀, same locality, July 19; 6 ♀, same locality, July 21, [all U. S. Biol. Surv.]; 1 ♂, 1 ♀, John Smith Ranger Ranch, Colorado, July 3, 1913, [U. S. Biol. Surv.]; 1 ♂, Farewell Creek, Saskatchewan, Canada, [Illinois].

***Pogonomyia aldrichi* sp. n.**

An intensely black species which is more robust than *similis* and lacks the distinct pruinescence on the abdomen which is more or less conspicuous in *minor* and quite evident in *similis*. The chaetotaxy of the mid femora in both sexes serves to separate *aldrichi* from the other two. Length, 5.5 to 6.5 mm.

Type.—♂; Moscow, Idaho, May 22, 1913, (Aldrich), [Illinois].

***Pogonomyia latifrons* sp. n.**

Female.—Similar to the other species in color.

Differs from *alpicola* in having the arista more distinctly hairy, and from the species with hairy arista in having a strong bristle on antero-ventral surface of mid tibia as well as a much broader frons, the distance from anterior ocellus to base of antennae about equal to width of frons at anterior margin. The mid femur has one strong bristle near base of antero-ventral surface. Length, 4.5 mm.

Type.—♀; Tennessee Pass, Colorado, July 24, 1917, (Aldrich), [Illinois].

Subfamily COENOSIINAE

The characters which distinguish this family from Phaoniinae are very few. In fact several genera that have been at various times placed in Coenosiinae are now considered as part of Phaoniinae, leaving in the former only *Schoenomyza*, *Coenosia*, *Macrorchis*, *Allognotha*, *Hopologaster* and *Caricea* of the North American fauna. *Dexiopsis* has been recorded from North America, but I consider the species so recorded does not belong to that genus.

ALLOGNOTHA Pokorný

This genus previously has not been recorded from North America. I have before me specimens of the genotype, *agromyzina* Zetterstedt, which differs structurally from the species before me

in having the antennae much longer and the third joint acute at apex on upper side. The European species is entirely black, whereas the new one is testaceous.

From all other genera in Coenosinae *Allognotha* may be separated by the discontinuance of costa at apex of third vein.

***Allognotha semivitta* sp. n.**

Male and *Female*.—Yellowish testaceous, opaque. Head paler than rest of body, the face nearly white; center portion of occiput grayish. Thorax sometimes entirely yellow, but normally with gray or fuscous markings as follows: Dorsum with four vittae, the outer pair very short, not extending cephalad of the suture, the median pair extending from anterior margin to penultimate pair of dorso-centrals, postnotum with center broadly dark, mesopleura, sternopleura and hypopleura each with a large dark spot. Legs entirely testaceous. Wings clear, veins yellow.

Frons slightly less than one-third the width of head, rounded in profile; ocellar bristles very strong; orbitals three to four, antennae short, not extending much below middle of face; eyes decidedly divergent below; face vertical; parafacials distinct in profile, of equal width throughout their length; vibrissae strong; mouth margin with six to nine strong black bristles; arista with short hairs. Presutural acrostichals irregularly two-rowed; scutellum with four strong bristles. Legs with bristles arranged as in normal *Coenosia* species, but rather shorter and stouter. Hypopygium small; fifth sternite with a deep central incision, dividing the segment into two long processes. Veins 3 and 4 distinctly divergent at apices. Length, 3 to 4.5 mm.

Type.—♂; Meredosia, Illinois, August 19, 1917, [Illinois].

Paratypes.—2 ♀, topotypical, May 29; 2 ♂, 1 ♀, Havana, Illinois, August 30 to 31; 1 ♀, labelled "N. Ill."

The specimens with the exception of the last one were taken by Mr. C. A. Hart and the writer in 1917, while collecting in the sand regions at the two places named.

The species bears a strong resemblance to *Coenosia modesta* Loew, which is, however, a true *Coenosia*.

The type is in the collection of the State Natural History Survey of Illinois, and a paratype is deposited in the Academy of Natural Sciences of Philadelphia.

***Coenosia fraterna* sp. n.**

Male and *Female*.—Black, slightly shining. Head black, frons, face, cheeks, and apex of second antennal joint whitish gray pruinose; antennae, proboscis and palpi black. Thorax whitish pruinose, with three faint brown vittae. Abdomen colored as thorax, with a pair of brown spots on dorsum of segments two, three and four. Legs black, bases of tibia reddish, more broadly so in female. Wings clear. Calyptera white. Halteres yellowish.

Frons distinctly longer than broad, parallel-sided; each orbit with three long bristles and a weak hair between the forward pair; antennae not as long as face, third joint slender, twice as long as second, sharply angulate at apex on upper side; arista pubescent; face vertical in profile, the orbits narrow, but distinct on their whole length in profile; cheek not twice as high as width of parafacial (orbit) in profile, margin with a series of long hairs, vibrissal angle not elevated; vibrissa long, one bristle above it. Presutural acrostichals weak, two-rowed. Abdomen rather short, subcylindrical, all segments with discal bristles in transverse series, those on segments three and four very long; fifth sternite with lateral processes short, somewhat angulate at apices. Fore tibia with one posterior median bristle; mid tibia with two bristles at same distance from base, one antero-dorsal and one postero-dorsal; mid femora with a few widely placed bristles on postero-ventral surface; hind femur with long widely placed bristles on antero- and postero-ventral surfaces; hind tibia with two bristles, one antero-dorsal and one antero-ventral, the latter much nearer to apex than the former. Wing venation similar to that of *tibialis* Stein but the sixth vein is shorter, almost absent, and the apex of wing is not pointed as in that species, so that the apices of veins 3 and 4 are almost in vertical line, whereas in *tibialis* the third vein is almost in extreme apex, while the fourth is much caudad of it. Length, 2.75 to 3.5 mm.

Type.—♂; Milbrae, San Mateo County, California, March 20, 1908, [A. N. S. No. 6202]. *Paratypes*.—7 ♀, Highrolls, New Mexico, June 2 and 10, 1902; Berkeley Hills, California, March 14, 1908; Troy, Idaho, May 31, 1908; Beulah, New Mexico, June 28, 1902; Blitzen River, Oregon, July 6, 1906, [Illinois].

There are also before me fifteen female specimens from the collection of the United States Bureau of Biological Survey taken at Grant, and John Smith Ranger Ranch, Colorado, July 3 and 20 to 21 and August 20.

The foregoing species very closely resembles *tibialis* Stein in color, but differs in having the third antennal joint slender, the parafacials distinct in profile and the mid tibial bristles at same distance from base.

Coenosia ovata Stein

1897. *Coenosia ovata* Stein, Berl. Ent. Zeit., xlii, 263.

In the original description of this species Stein makes no mention of the peculiar lobe-like protuberance of the anal angle of the wing in the male of this species, which at once separates it from any so far recorded from North America.

There are three specimens in the collection before me from the following localities: one male, Highrolls, New Mexico, June 11,

1902; one female, same locality, May 31, 1902; one female, Alamogordo, New Mexico, May 8, 1902.

Coenosia basalis Stein

1897. *Dexiopsis basalis* Stein, Berl. Ent. Zeit., xlii, 259.

This species was originally described by Stein as a *Dexiopsis*, but it does not belong to that genus, having but one pair of pre-sutural dorso-centrals, the hypopygium very small, and the sixth vein not longer than in normal *Coenosia* species.

If I am correct in my interpretation of the limits of the species it is quite variable in color, the palpi and front coxae being sometimes entirely dark, and varying to entirely pale, while the mid and hind femora are usually conspicuously blackened at apices and vary to entirely yellow. The abdomen is sometimes conspicuously yellow at base, but in the specimens from New Mexico the color is entirely gray and the lateral spots on dorsum are absent. There is a constancy in chaetotaxy, and other characters, that forces me to the conclusion that I have before me not several species, but one which is variable in color.

From other species in the genus, *basalis* may be readily separated by the presence of a long postero-dorsal bristle at middle on hind tibia, and by the rather short stout abdomen, which has usually a central vitta and paired spots on dorsum, while the fifth sternite is short, with a shallow central incision and is normally almost entirely hidden.

Localities: Alamogordo, New Mexico, April 8 and 22, and May 3, 1902; Clouderoft, New Mexico, June 18, 1902, two males, two females.

Coenosia setigera sp. n.

Male.—Black, densely pruinose. Head black, interfrontalia opaque black, ocellar triangle and orbits brownish gray pruinose, face, facial orbits, and cheeks with white pruinescence; antennae black; palpi brown. Thorax slightly shining, without vittae. Abdomen with a pair of faint brown spots on dorsum of segments two, three and four which are very large, and contiguous or almost so centrally, so that the dorsum appears to have a broad brown central vitta posteriorly; fifth sternite and hypopygium black. Legs yellow, mid and hind coxae grayish, tarsi black. Wings clear, veins dark brown. Calyptra white. Halteres yellow.

Frons almost twice as long as wide and nearly one-third the width of head; ocellar triangle short, not extending to middle of frons; orbits narrow, about one-fourth as wide as interfrontalia, the bristles very long, four in number, with

one to two interspersed long hairs; antennae shorter than face, third joint not over twice as long as second, slightly angulate at apex on upper side; arista slender, with distinct pubescence; parafacial distinct in profile, slightly narrower than third antennal joint, and half as wide as height of cheek, the latter with five to six long marginal hairs, a very long vibrissa and one bristly hair above the latter. Presutural acrostichals two-rowed, sparse; bristles of thorax much longer than those of abdomen. Fifth abdominal sternite with a shallow, rounded posterior excision; hypopygium small. Legs slender; fore tibia with one posterior bristle; mid femur with three to four anterior and postero-ventral bristles on basal half; mid tibia with the usual two bristles at nearly the same height; hind femur with four very long, widely spaced bristles on antero-ventral surface, between which there are much shorter setulose hairs; hind tibia with one comparatively short antero-ventral bristle, the antero-dorsal bristle and the preapical dorsal one-half as long as tibia and very slender. Inner cross-vein at four-sevenths from base of discal cell; last section of fourth vein twice as long as preceding section; apices of third and fourth veins almost in vertical line. Length, 2.75 mm.

Type.—♂; Beulah, New Mexico, top of range, June 28, 1902, [A. N. S. No. 6203].

This species resembles *flavicoxa* Stein in general appearance, but that species differs in coloration of legs, bristling of hind femora and tibiae, and in venation.

***Coenosia argentata* Coquillett?**

1904. *Coenosia argentata* Coquillett, Invert. Pac., i, 33.

A female in very poor condition agrees fairly well with males of this species before me, but has the legs paler, and the bristles shorter. I refer the specimen here with some doubt.³

Locality; San Francisco, California, August 7, (F. E. Blaisdell), 1908.

***Coenosia lata* Walker**

1853. *Coenosia lata* Walker, Dipt. Saund., 368.

One female, Clouderoft, New Mexico, June 16, 1902; one female, San Francisco, California, August 7, (F. E. Blaisdell), 1908.

***Coenosia* sp?.**

One female in very poor condition; may possibly be an immature example of *fraterna* sp. n.

Locality; Mesa Grande, Sonoma County, California, (J. P. Baumberger), June, 1908.

³Since writing the above I have received two male specimens of *argentata*, taken at San Francisco, California, March 30, 1909, which are now in the Academy collection. These agree very closely with the female referred to above.

Macrororchis majuscula (Coquillett)

1904. *Coenosia majuscula* Coquillett, Invert. Pac., i, 34.

There is one female of this species in the collection.

Locality; San Francisco, California, August 7, 1908, (F. E. Blaisdell).

The only other species of this genus which I have seen from North America is *antica* Walker (*insignis* Stein). The latter differs from Coquillett's species in having but one pair of presutural dorso-centrals. Both species have two long, closely approximated bristles at middle of hind tibia, one anterior and one antero-dorsal. There is in the specimen of *majuscula* before me a weak median postero-dorsal bristle on the hind tibia, which is not mentioned by Coquillett and which does not appear in any of my specimens of *antica*.

SCHOENOMYZA Haliday

There are only three species of this genus listed from North America. One of these, *pulicaria* V. d. Wulp, I have not seen.

I have drawn up a key which summarizes the principal differentiating characters of the males of the species before me, which should prove useful to students of the group. It is possible that *chrysostoma* and *dorsalis* are merely extreme forms of but one species, but there appear to be several forms distinguishable by color, occurring in the west, as shown in this paper.

Key to Species

Males

1. Frons entirely ochreous; each orbit with three bristles.....2
 Frons with anterior half conspicuously whitened; each orbit with two bristles.....3
2. Cross-veins of wings with conspicuous spot-like infuscation; last section of fourth vein only slightly longer than preceding section, and much shorter than the width of wing at middle.....**aurifrons** sp. n.
 Cross-veins of wings faintly or not at all infuscated; last section of fourth vein more than twice as long as preceding section, and at least as long as width of wing at middle.....**convexifrons** sp. n.
3. Upper half or more of face black or blackish brown...**chrysostoma** Loew
 Face entirely ochreous.....4
4. Face sulphur yellow, not, or very little, darker than cheeks; upper portion of second and third antennal joints reddish yellow; when seen from above the ocellar triangle is continued as an opaque black wedge to, or very nearly to, anterior margin of frons.
 dorsalis var. **sulfuriceps** var. n.
 Face orange yellow, distinctly darker than cheeks, antennae black.....5

5. Frons when seen from above with the ocellar triangle carried forward in the form of an opaque black wedge to, or almost to, anterior margin, dividing the silvery white portion into two separate areas.

dorsalis Loew

Frons when seen from above with the anterior half entirely silvery white, the anterior wedge-like extension of ocellar triangle never distinct, and rarely darker than surrounding areas.

dorsalis var. **partita** var. n.

Schoenomyza convexifrons sp. n.

Male.—Black, opaque, covered with dense olive-gray pruinescence. Head black, gray pruinose on occiput, covered with dense golden pruinescence on frons, face and cheeks, when viewed from in front the ocellar triangle, and upper half of each orbit appear black-brown; antennae black, with inconspicuous whitish pruinescence, most distinct at apex of second joint; proboscis black, palpi fuscous. Thoracic dorsum with four brown vittae, two between the rows of dorso-centrals, and one on each side between the dorso-centrals and intra-alars; in front of scutellum on mesonotum there is a short brown streak between the median pair of vittae, and on disc of scutellum there is a brown mark. Abdomen with a pair of large, poorly defined brownish black spots on disc of all dorsal segments. Legs black. Wings clear, veins black, cross-veins hardly more conspicuous than the other veins. Calyptra and halteres whitish.

Frons in profile slightly convex, at vertex a little over half the width of head, narrowed anteriorly, its central length about equal to its greatest width; ocellar bristles long and strong; each orbit with three bristles, the upper one strongest, in addition to the bristles there are numerous short hairs on orbits; antennae below the average size for the genus, third joint about twice as long as wide, sharply angulated at apex on upper side; arista tapered, almost nude; face in profile slightly receding, parafacials narrow; cheek as high as width of third antennal joint; one short bristle above the strong vibrissa. Acrostichals weak, arranged in pairs from anterior to posterior margin of disc, usually six pairs present (two+four). Chaetotaxy of legs as in *chrysostoma* Loew. Wings narrow; last section of fourth vein at least twice as long as preceding section, penultimate section of costa longer than penultimate section of fourth vein; outer cross-vein at more than its own length from apex of fifth.

Female.—Differs in color from the male in having the frons, face, and cheeks pale olive-gray pruinose, and the cross-veins of the wings noticeably infuscated. Length, *male*, 3 mm., *female*, 4 mm.

The frons is broader than in the male and slightly less buccate. In other respects the sexes agree very closely.

Type.—♂; Milbrae, California, March 20, 1908. [A. N. S. No. 6204]. *Paratypes*.—4 ♂, 2 ♀, topotypical.

Schoenomyza aurifrons sp. n.

Male.—Black, densely covered with olive-gray pruinescence. Back of head with olive-gray pruinescence, frons, face, and cheeks with golden brown pruinescence; antennae black, apex of second joint and inner and outer surfaces of third on upper half with silvery white pruinescence; proboscis glossy black; palpi yellow. Dorsum of thorax not vittate. Abdomen with a small pair of black spots on dorsum of second visible segment, and a larger pair on dorsum of third and fourth which are glossy black. Legs black. Wings slightly milky, both cross-veins broadly infuscated. Calyptra white. Halteres yellow.

Frons gently rounded in profile, distinctly over half as wide as head at vertex, much narrowed anteriorly; cephalic chaetotaxy similar to that of preceding species, but there is no bristle above vibrissa in type. Chaetotaxy of thorax and legs as in preceding species, the wings noticeably broader, with venation differing as indicated in key to species, and the apices of third and fourth veins more noticeably convergent. Length, 2.5 mm.

Type.—♂; Mexico City, Mexico, [Coll. Illinois].

Schoenomyza chrysostoma Loew

1869. *Schoenomyza chrysostoma* Loew, Berl. Ent. Zeit., xiii, 177. (Cent., ix, 86.)

There are a number of specimens of both sexes amongst the material which I consider referable to this species, although the face of the male is not black, showing only a gradual darkening towards base of antennae. In one of my Illinois specimens I find the same variation from type.

Localities: Cloudcroft, New Mexico, June 16 and 20, 1902, three specimens; Highrolls, New Mexico, May 29, 1902, one specimen; East Las Vegas, New Mexico, June 24, 1902, one specimen; top of Las Vegas range, Beulah, New Mexico, June 28, 1902, five specimens.

Schoenomyza dorsalis Loew

1872. *Schoenomyza dorsalis* Loew, Berl. Ent. Zeit., xvi, 95. (Cent., x, 73.)

There is one male in the material which agrees in all particulars with specimens from Illinois, except that the thoracic dorsum is not so distinctly vittate, but the specimen has been damaged slightly, so that the difference may be due to that fact.

Locality; Beulah, New Mexico, June 28, 1902, top of range.

Schoenomyza dorsalis var. **sulfuriceps** var. n.

Male.—Similar in color to *dorsalis* Loew except that the face is entirely sulphur yellow, and not or but little darker than the cheeks, and the antennae are broadly red fish yellow above. In other respects it agrees very closely with

typical *dorsalis* and there is little doubt in my mind that it is but a variety of that species.

Female.—This sex is very similar to typical *dorsalis* females, but in the latter the face is usually appreciably darker than the cheeks and the thorax is more distinctly vittate. Length, 2.25 to 3.25 mm.

Type.—♂; Berkeley Hills, California, March 22, 1908. [A. N. S. No. 6205]. *Paratypes*.—2 ♂, topotypical; 1 ♂, 6 ♀, Yosemite Valley, California, May 22, 1908; 3 ♂, Milbrae, California, April 20, 1908; 1 ♂, 1 ♀, Moscow, Idaho, June 2, 1908.

Schoenomyza dorsalis var. **partita** var. n.

Male.—Differs from *dorsalis* in having the anterior half of frons entirely silvery, the ocellar triangle being silvered at apex, so that when seen in front the black wedge-like anterior extension, which separates the white portion of frons into two areas in *dorsalis*, is absent. In other respects the specimens agree very closely with typical *dorsalis*, but sometimes the face is but little darker than the cheeks.

Female.—Almost inseparable from typical *dorsalis*; the only difference appears to be in the color of the frons which resembles that of the male, though without silvery pruinescence. Length, 2.75 to 4 mm.

Type.—♂; Berkeley Hills, California, April 11, 1908, [A. N. S. No. 6206]. *Paratypes*.—1 ♂, 3 ♀, topotypical; 6 ♂, 10 ♀, Lagunitas Cañon, California, March 29, 1908; 2 ♀, Berkeley Hills, March 22, 1908; 3 ♀, Milbrae, California, March 20, 1908; 1 ♀, Troy, Idaho, May 31, 1908; 1 ♀, Sarita, Texas, November 29, 1911, [Illinois].

Subfamily HYDROTAEINAE

There are representatives of two genera of this subfamily in the collection.

HYDROTAEA R.-D.

Several species of this genus are very annoying to man and cattle in this country and Europe. The first three species in this collection occur in Europe as well as in North America.

Hydrotaea occulta Meigen

1826. *Anthomyia occulta* Meigen, Syst. Besch., v, 133.

One male, one female, Lagunitas Cañon, Marin County, California, March 29, 1908.

Hydrotaea armipes Fallen

1823. *Musca armipes* Fallen, Dipt. Seuc., Muse., 75.

This species, the larvae of which are found in manure, is the most widely distributed of the genus, occurring throughout North America and Europe.

There are specimens in the collection with data as follows: one male and two females, Alamogordo, New Mexico, April 14, 15, 25, 1902; one female, Clouderoft, New Mexico, May 21, 1902; one male, one female, Lagunitas Cañon, Marin County, California, March 29, 1908; one female, Mesa Grande, Sonoma County, California, July 12, 1908; two females, Troy, Idaho, May 31, 1908; and one female, Moscow, Idaho, June 2, 1908.

Hydrotaea dentipes Fabricius

1805. *Musca dentipes* Fabricius, Syst. Antil., 303.

Three females that appear to be undoubted *dentipes* Fabricius with the following data: Clouderoft, New Mexico, May 22, 24, and 26, 1902.

In addition to the lack of bristles at base of ventral surfaces of mid femora, the above specimens have the four to five bristles at apex of antero-ventral surface of hind femur very much more closely placed than in *houghi* Malloch, and the postero-dorsal bristle is usually about one-third from apex of tibia, whereas in *houghi* it is usually two fifths from apex.

This is the first time I have seen what I consider true *dentipes* from North America.

Hydrotaea unispinosa Stein

1897. *Hydrotaea unispinosa* Stein, Berl. Ent. Zeit., xlii, 165.

One female which agrees in all particulars with the Colorado type in the Hough collection.

Locality; Clouderoft, New Mexico, May 24, 1902.

Hydrotaea sp.?

One female closely resembling *palaestrica* Meigen.

Locality; Clouderoft, New Mexico, May 27, 1902.

Hydrotaea sp.?

One female resembling *unispinosa* Stein.

Locality; Troy, Idaho, May 31, 1908.

Hydrotaea metatarsata Stein

1897. *Hydrotaea metatarsata* Stein, Berl. Ent. Zeit., xlii, 166.

One small female of this species.

Locality; Alamogordo, New Mexico, April 22, 1902.

OPHYRA R.-D.

There are two species of this genus found in the United States, one of which is confined to the southern and tropical American states; the other, which is represented in the material before me, occurs in Europe and North America, extending its range well into Canada.

Ophyra leucostoma Wied

1817. *Anthomyia leucostoma* Wiedemann, Zool. Mag., i, 82.

One male, Redwood Cañon, Marin County, California, May 17, 1908; one female, Berkeley Hills, Alameda County, California, April 20, 1908.

Subfamily LISPHINAE

There is but one genus in this subfamily, which may be separated from any other by the presence of a clump of hairs on center of pteropleura, the dilated palpi, widely separated eyes and hairy parafacials in both sexes, very large lower calypter, incomplete sixth vein, the absence of the prealar bristle, and lack of hairs on under surface of scutellum.

Lispa tentaculata DeGeer

1776. *Musca tentaculata* DeGeer, Ins. vi, 86.

There are five specimens of this widely distributed species in collection.

Localities: one male, Lagunitas Cañon, Marin County, California, March 29, 1908; one male, one female, Alamogordo, New Mexico, May 1, 1902; two females, same locality, May 5, 1902.

Subfamily FANNIINAE

Fannia is the only genus of this subfamily represented in this collection. I have a key for the identification of the species of this genus in manuscript and I hope to publish it shortly, including all species in this and other papers by the writer, and those described or recorded by Stein.

Fannia benjamini Malloch

1913. *Fannia benjamini* Malloch, Proc. U. S. Nat. Mus., xliv, 625, pl. 77, f. 9.

There are five specimens in the collection from Alamogordo, New Mexico, with dates as follows: three males, April 19, 1902, two females, May 7 and 8, 1902.

The species was originally described from specimens collected in California, Arkansas, and Cuba. I have since seen it from Brownsville, Texas, and Graham Mountains, Arizona.

Fannia femoralis Stein

1897. *Homalomyia femoralis* Stein, Berl. Ent. Zeit., xlii, 282.

Three males taken at Alamogordo, New Mexico, April 19 and 23, 1902.

Fannia splendida Stein

1897. *Homalomyia splendida* Stein, Berl. Ent. Zeit., xlii, 170.

One male; Mesa Grande, Sonoma County, California, June 1908, (J. P. Baumberger).

Fannia trianguligera sp. n.

Male.—Black, slightly shining. Face, orbits, and cheeks silvery. Abdomen with dense bluish gray pruinescence on dorsum, second, third and fourth segments each with a large black triangle, the apex of which is carried to anterior margin, fifth segment with a black dorso-central stripe. Legs black. Calyptra white. Halteres yellow.

Eyes bare, separated by slightly more than width across posterior ocelli; arista bare; palpi stout, as long as apical portion of proboscis. Thorax with acrostichals two-rowed in front, becoming three-rowed just before suture. Hypopygium small, not protruded. Legs similar to *incisurata* Zetterstedt, differing noticeably only in the bristling of the mid femur, the antero-ventral series of bristles being much longer than in that species, beginning at base with bristles which are at least as long as diameter of femur and continuing to apex, gradually becoming closer and shorter; the postero-ventral series is much denser, and more regular than in *incisurata* and begins at base, while many of the bristles of apical third of series are distinctly curved at apex, almost fishhook-like; the mid tibia is also more noticeably swollen on apical half than in *incisurata*, the latter having the tibia gradually thickened from base to apex, whereas in the present species it is appreciably attenuated to beyond middle and then rather abruptly thickened. The hind legs are almost the same in form and chaetotaxy in both species, but the bristles on antero-ventral and postero-ventral surfaces are weaker and less numerous in *trianguligera* than in *incisurata*. Calyptra unequal.

Female.—Similar to the female of *scalaris* Fabricius and *incisurata*. Differs only in having the interfrontalia red-brown, the orbits very broad, each as

wide as interfrontalia, rounded off in front; legs entirely black; the antero-dorsal bristle present on fore tibia but weak; thoracic chaetotaxy as in male. Length, 4.5 to 5.5 mm.

Type.—♂; Alamogordo, New Mexico, May 6, 1902, [A. N. S. No. 6207]. *Paratypes*.—2 ♀, May 6; 2 ♂, 1 ♀, May 7; 1 ♂, May 8, topotypical.

Fannia plebeia sp. n.

Male.—Deep black, shining. Orbits densely white pruinose, face less densely so. Thorax with faint grayish pruinoscence on sides and posteriorly. Abdomen with the usual triangular black dorsal mark on each segment, the lateral extensions of which are less distinct than the central portion. Legs black. Wings slightly smoky. Calyptera brownish yellow. Halteres with knobs yellowish.

Eyes bare, separated at narrowest part of frons by width across posterior ocelli; antennae distinctly shorter than face, third joint broad; arista bare; cheek linear. Presutural acrostichals moderately long, two-rowed. Abdomen broad; hypopygium small; fore tibia without median bristle; mid femur very slightly attenuated at apex; antero-ventral surface with a series of sixteen to eighteen bristles extending from about one-fourth from base to apex, the largest one not as long as diameter of femur, the series becoming closer and shorter to apex and at no point interrupted; postero-ventral surface with two to three series of bristles which begin near base and run to apex, one series distinctly stronger than the others, and all of them longer than the antero-ventral series; mid tibia swollen on apical half, the basal half slender, pubescence erect, distinct but not conspicuous; bristles normal; hind femur with three to five bristles on apical half of antero-ventral surface, the postero-ventral surface with short hairs on basal half; hind tibia with three bristles, one antero-ventral, one antero-dorsal, and one postero-dorsal, the latter stronger than the others and the preapical dorsal. Hind coxa with a bristle at apex above. Lower calyptra distinctly protruded. Length, 4.5 mm.

Type.—♂; Beulah, New Mexico, June 29, 1902, [A. N. S. No. 6208].

This species bears a resemblance to *trianguligera* sp. n., but differs in chaetotaxy of mid and hind femora and tibiae.

Fannia minutipalpis Stein

1895. *Homalomyia minutipalpis* Stein, Berl. Ent. Zeit., xl, 106.

Seven females taken at Clouderoft, New Mexico, on dates as follows: one specimen, May 21, 1902, five specimens, May 27, 1902, and one specimen, June 16, 1902.

A common and widely distributed species occurring in North America and Europe.

The male standing as *polychaeta* Stein in the Hough collection and named as such by Stein is *minutipalpis*, so that the former species cannot be considered as occurring in this country until an authentic specimen is obtained.

Fannia fuscula Fallen

1820. *Musca fuscula* Fallen, Dipt. Succ., Musc., 86.

One male from Lagunitas Cañon, Marin County, California, March 29, 1908.

Fannia laevis Stein

1897. *Homalomyia laevis* Stein, Berl. Ent. Zeit., xlii, 174.

One female of this species in collection agrees with the type female in all particulars. The species has in both sexes a single bristly hind coxal posterior hair, and the lower calypttra distinctly produced beyond the upper.

Locality; El Paso, Texas, March 31, 1902.

Fannia spathiophora sp. n.

Female.—Black, shining. Head with slightly iridescent pruinescence, that of frons when seen from in front almost pearlaceous. Thorax unstriped, more distinctly pruinescent than abdomen. Legs black, bases of fore tibiae pale. Wings clear, veins brown, yellow basally. Calypttra whitish yellow. Halteres yellow.

Frons slightly over one-third the head-width, orbit at widest part slightly narrower than interfrontalia at that part, bristles moderately long, each orbit with numerous short setulose hairs; antennae reaching almost to mouth margin, third joint broad; arista with short pubescence; cheek linear; proboscis short and thick; palpi short, leaf-like, at broadest part as broad as third antennal joint. Acrostichals strong, four to five pairs in front of suture; lower calypter smaller than upper, but of moderate size. Fore tibia unarmed at middle; mid tibia with one antero-dorsal and one postero-dorsal bristle; hind femur with two to three widely placed bristles on apical half of antero-ventral surface; hind tibia with three bristles, one antero-ventral, one antero-dorsal, and one postero-dorsal, the latter the strongest; hind coxae bare above on posterior margin. Last section of fourth vein nearly three times as long as preceding section; apical sections of veins 3 and 4 slightly convergent. Length, 3 to 3.75 mm.

Type.—♀; Gold Rock, Rainy River District, Ontario, Canada, July 21, 1905, (H. H. Neweomb), [Illinois]. *Paratypes*.—1 ♀, topotypical, [Illinois]; 1 ♀, Beulah, New Mexico, June 29, 1902.

The very conspicuously dilated palpi separate this species from any other known to me.

There is a European species which must closely resemble this one in structure of the palpi, *latipalpis* Stein, but the lower calypter projects beyond the upper in the latter. It is known only in the male sex.

The species was already known to me when the present collection was received.

Fannia sp.?

There is a female specimen in collection, from Cloudercroft, New Mexico, May 23, 1902, which bears a strong resemblance to that of *polychacta* Stein, but I prefer to have it without specific identification until I can examine more specimens.

Subfamily ANTHOMYIINAE

The genera of this subfamily are very poorly defined, there being no published keys or descriptions which serve to separate accurately the genera *Phorbia*, *Pegomyia*, *Hylemyia*, *Chortophila*, *Eremomyia*, and some others. The arbitrary characters used by the older authors have resulted in many cases, in a distinctly unnatural grouping and a thorough revision of generic concepts is essential.

I have used the generic names *Pegomyia* and *Hylemyia* in this paper, but hope soon to publish an accurate synopsis of generic characters for the group, the key herein presented being drawn up to cover only the genera in this paper.

Key to Genera Here Treated

1. Lower calypter distinctly protruded beyond upper.....2
 Lower calypter not protruded beyond upper.....6
2. Arista plumose; abdomen subcylindrical in male....**Hydrophoria** R.-D.
 Arista pubescent or bare.....3
3. Propleura hairy above humerus.....**Anthomyia** Meigen
 Propleura bare except just above coxa.....4
4. Hypopleura hairy on upper margin in front of spiracle...**Calythea** S. and D
 Hypopleura bare.....5
5. Mid tibia with a strong bristle on antero-ventral surface near middle.
 Egle R.-D.
 Mid tibia without a bristle on antero-ventral surface at middle.
 Pegomyia R.-D.
6. Post humeral bristle duplicated.....**Eremomyia** Stein
 Post humeral bristle single.....7

7. Frons in both sexes narrow, in the female without cruciate frontal bristles and the lower supraorbital bristle not directed forward, or very weak and but little proximad of anterior ocellus; face and frons buccate, the parafacials in profile as wide or wider than the third antennal joint, abdomen in male cylindrical; the hypopygium very small.

Hammomyia R.-D.

Frons in male usually narrow, in female nearly or quite one-third as wide as head, the lower supraorbital usually very strong and situated nearly midway between anterior ocellus and anterior margin of frons; face and frons rarely buccate, the parafacials in profile usually less than the width of the third antennal joint; abdomen sometimes subcylindrical

Hylemyia R.-D.

The distinction between the last two genera is not very clear in the males, some of the species of *Hylemyia* resembling *Hammomyia* very closely, but the females are readily separated and with a little care the males may also be distinguished.

HYDROPHORIA R.-D.

The members of this genus which I have seen possess the following characters: eyes bare, narrowly separated in male, widely separated in female, the lower supraorbital bristle in female directed forward; arista long haired; prealar bristle present; abdomen in male subcylindrical; fifth sternite with two long processes; lower calypter much larger than upper.

Hydrophoria subpellucida sp. n.

Male and female.—Black, slightly shining, covered with dense whitish gray pruinescence. Head black, orbits and cheeks silvery pruinose; frontal triangle reddish brown; antennae black, second joint slightly reddish at apex; palpi blackish brown. Thorax when viewed from in front with four subcontiguous black vittae anteriorly, when viewed from behind with five black vittae, the areas between the vittae pale gray and when seen from in front assuming a black appearance, reversing the black and gray arrangement. Abdomen yellow on basal half, covered with dense whitish pruinescence, and with a broad, central black vitta. Legs pitchy colored, the bases of tibiae pale, yellowish. Wings hyaline. Calyptra white. Halteres yellow.

Male.—Eyes separated by about the width of anterior ocellus; parafacials protruded in profile about as far as two-thirds the width of third antennal joint; arista very long plumose both above and below; cheek about one-eighth as high as eye, marginal bristles in a single row. Thorax with two to three pairs of presutural acrostichals; prealar bristle about half as long as the bristle behind it; hypopygium bare. Abdomen short, subconical; processes of fifth sternite short, rounded apically, with rather dense, short black hairs, and a few long apical bristles. Fore tibia with one antero-dorsal and one posterior

bristle; mid femur with three to five bristles on basal half of postero-ventral surface; hind femur with six to eight widely spaced bristles on whole length of antero-ventral surface and one to two about middle of postero-ventral; hind tibia with two to three antero-ventral, seven to nine short antero-dorsal, and two postero-dorsal bristles. Costal thorn short; outer cross-vein bent; last sections of veins 3 and 4 subparallel.

Female.—Differs from the male in having the eyes separated at vertex by one-third the width of head, each orbit nearly one-half as wide as interfrontalia, the latter with a pair of cruciate bristles, and the abdomen more abruptly pointed at apex. Length, 4.5 to 6 mm.

Type.—♂; Alamogordo, New Mexico, April 30, 1902. [A. N. S. No. 6209]. *Paratypes*.—2 ♂, 2 ♀, topotypical, April 30, May 5 and 15.

This species resembles *ruralis* Meigen, a European species, in coloration, but differs in chaetotaxy of hind tibia and some other characters.

Hydrophoria divisa Meigen

1826. *Anthomyia divisa* Meigen, Sys. Besch., v. 99.

Two males and three females, Berkeley Hills, Alameda County, California, April 20, 1908; two females, Redwood Cañon, Marin County, California, May 17, 1908.

A European species which is widely distributed throughout North America.

Hydrophoria uniformis sp. n.

Male and female.—Black, almost glossy. Head black, frons, orbits, face, and cheeks in both sexes with silvery pruinescence, interfrontalia in female appearing opaque black when seen from above; antennae and palpi black. Dorsum of thorax with three broad black vittae. Abdomen with a slender black dorso-central stripe and black anterior and posterior margins to segments. Legs black. Wings clear, veins black. Calyptra white. Halteres yellow.

Male.—Eyes separated by width of anterior ocellus; antennae shorter than face, third joint one and one-half times as long as second; arista plumose on basal half, the longest hairs about equal in length to width of third antennal joint; parafacials in profile about half as wide as third antennal joint, the latter equal in width to height of cheek. Thorax with chaetotaxy as in *divisa* Meigen, presutural acrostichals irregularly four-rowed, weak. Abdomen subcylindrical, tapered apically; fifth sternite deeply cleft centrally, the processes with rather long woolly hairs along inner half, with longer, slender, curled, bristly hairs on disc and at apex. Fore tibia usually with two bristles, a weak one on antero-dorsal surface and a strong one on posterior; mid femur with three to five slender bristles on basal half of postero-ventral surface; mid tibia with one antero-ventral, one antero-dorsal, three to four postero-dorsal

(in an irregular series) and one to two postero-ventral bristles; hind femur with six to eight widely placed bristles on the entire length of antero-ventral surface and three to four on basal half of postero-ventral; hind tibia with two to four antero-ventral, seven to nine unequal sized antero-dorsal, and three long posterior bristles. Veins 3 and 4 distinctly convergent apically; outer cross-vein oblique, distinctly curved.

Female.—Eyes separated by one-third the head-width; orbits one-fourth as wide as interfrontalia, almost bare except for the bristles; cruciate bristles strong. In other respects similar to male. Length, 4.5 to 5.25 mm.

Type.—♂; Dubois, Illinois, May 23 to 25, 1917. [Illinois].
Paratypes.—1 ♀, topotypical, [Illinois]; numerous specimens of both sexes from Urbana, Illinois, April 5 to 7, 1909; Savoy, Illinois, March 26, 1917; Be'tsville, Maryland, Plummer's Island, Maryland, April to August inclusive.

The types are in the collection of Illinois State Natural History Survey, a pair of the Urbana paratypes are in the collection of the Academy of Natural Sciences of Philadelphia, and the Maryland specimens are in the collection of the United States Bureau of Biological Survey.

This species is smaller than *divisa* Meigen and *ambigua* Meigen, resembling the latter in having the hypopleura bare, but it is smaller than that species, has the dorsal abdominal stripe uniform in width on its whole length and has the eyes less widely separated.

ANTHOMYIA Meigen

I consider as belonging to this genus only those species that have the propleura hairy cephalad and slightly ventrad of the spiracle, and the lower calypter distinctly projecting.

Anthomyia pluvialis Linné, var.

1761 *Musca pluvialis* Linnæus, Faun. Suec., (2), 455.

One female in collection agrees in color with several I have from Illinois, Massachusetts, and Virginia. These specimens differ from typical *pluvialis* in having the dorsum of thorax with a brown vitta on each side of middle, instead of the five black spots that are present in the former. It is possible that the form here recorded is distinct from *pluvialis*, but I have no males and hesitate to give a definite opinion. Locality; Clouderoft, New Mexico, June 16, 1902.

CALYTHERA S. and D.

This genus contains but one species, which until recently was included in *Anthomyia*. The distinguishing characters are as follows: Calyptra unequal in size, the lower one protruding beyond the upper; arista almost bare; hypopleura with long hairs above in front of spiracle; propleura bare cephalad and ventrad of spiracle; sixth wing-vein complete.

The genotype recorded below is found throughout Europe and North America.

Calythea albicincta Fallen

1820. *Musca al'icincta* Fallen, Faun. Suec., Musc., 73.

Six males and six females, Alamogordo, New Mexico, April 9 to May 15, 1902; one female, Highrolls, New Mexico, May 31, 1902; one female, Mesa Grande, Sonoma County, California, May, 1908 (J. P. Baumberger); one female, Clouderoft, New Mexico, May 16, 1902; one female, Moscow, Idaho, June 2, 1908.

EGLE R.-D.

This genus contains several species that have been placed in *Anthomyia* and one that has been placed in *Phorbia* (*Hylemyia*) by American authors. Two species in this collection are referable here, one of which is evidently undescribed.

Egle cinerella Fallen

1820. *Musca cinerella* Fallen, Dipt. Suec., Musc., 77.

Eight specimens with data as follows: two males, one female, Berkeley Hills, Alameda County, California, April, 1908; three males, Mesa Grande, Sonoma County, California, June, 1908; one female, same locality, May, 1908; one female, same locality, July 12, 1908.

Egle hirta sp. n.

Male.—Deep black, slightly shining. Head black, interfrontalia, facalia, and cheeks largely reddish testaceous; antennae and palpi black. Thorax with a narrow vitta between acrostichals and dorso-centrals, a spot mesad of humerus, and the lateral margins gray pruinose. Abdomen with a large, oblong, gray pruinose patch on each side of each dorsal segment, leaving the anterior and posterior margins and center of the segments deep black. Legs black. Wings clear, veins black. Calyptra white. Halteres yellow.

Eyes separated by width of anterior ocellus; parafacials in profile much wider than third antennal joint and slightly wider than height of cheek, the latter densely haired posteriorly on lower margin and with a clump of

strongly curved hairs invading the cheek caudad of the vibrissal angle; vibrissa not stronger than the other eight to nine hairs in the series with it; antennae shorter than face, third joint one and one-half times as long as second, arista almost bare; face concave in profile, mouth margin protruded further than frons at base of antennae. Thorax with long erect hairs, the bristles longer than the hairs, but not very strong; presutural aerostichals represented by about six series of slender erect hairs; postsutural dorso-centrals three; prealar weak; sternopleura and mesopleura posteriorly and the area just above fore coxa with dense long hairs, the sternopleural bristles hardly distinguishable. Abdomen subovate, with dense, erect long hair laterally. Legs normal; fore tibia with one antero-dorsal and one posterior bristle; mid femur with very short setulose hairs on basal half of antero-ventral surface, and seven to nine long, slender bristles on basal half; mid tibia with one antero-ventral, one antero-dorsal, three postero-dorsal, and two postero-ventral bristles; hind femur with a continuous series of very long bristles on antero-ventral surface, and another series of shorter bristles on postero-ventral surface which become very short near apex; hind tibia with one short antero-ventral bristle, a series of rather closely placed short setulose hairs (13 to 15) extending from base to near apex on antero-dorsal surface, and three long bristles on postero-dorsal surface. Apical sections of veins 3 and 4 decidedly convergent at apices; outer cross-vein oblique, not very much curved; costal thorn minute. Length, 5.5 mm.

Type.—♂; Beulah, New Mexico, June 28, 1902, top of range, [A. N. S. No. 6210].

This species closely resembles *mystacea* Coquillett, but differs in having an antero-ventral mid tibial bristle, the short bristles on antero-dorsal surface of hind tibia more numerous, and only three bristles on postero-dorsal surface of that tibia.

PEGOMYIA R.-D.

I have placed in this genus five species in this collection, two of which are new. The last three species are placed here provisionally.

The lower calypter is protruded distinctly beyond upper in both species. This character alone is not sufficient for generic separation, but, until I am in a position to publish reliable distinguishing characters for this and allied genera, the present arrangement is the best available.

Pegomyia hyoseyami Panzer

1809. *Musca hyoseyami* Panzer, Faun. Germ., cviii, 13.

One female specimen of this species from Beulah, New Mexico, June 28, 1902, top of range.

A very common species in Europe and North America. The larvae mine in leaves of spinach, beet, lambs-quarters, etc.

***Pegomyia acutipennis* sp. n.**

Male.—Black, densely gray pruinose, thorax slightly shining. Head black; frontal triangle and parafacials largely rufous. Antennae and palpi black. Thorax with three rather indistinct brownish black vittae, the laterals most distinct caudad of suture. Abdomen marked as in *Anthomyia pluvialis* Linné. Legs black, mid and hind femora brownish towards apices, all tibia reddish testaceous. Wings clear. Calyptra white. Halteres yellowish.

Eyes very large, covering almost the entire side of head, almost touching above, parafacials linear in profile, cheek not higher than width of third antennal joint, the latter less than twice as long as second; arista microscopically pubescent. Thorax with three pairs of presutural acrostichals; prealar bristle about one-third as long as the bristle behind it. Abdomen flattened; fifth sternite with a deep central incision, each lateral process terminating in a rounded point, the margin of the incision armed with rather dense, short stiff hairs; hypopygium small. Fore tibia with two short bristles, one antero-dorsal and one posterior; mid femur with five to seven bristles on basal half of postero-ventral surface; mid tibia with one antero-dorsal, one to two postero-dorsal, and one to three posterior bristles; hind femur with a series of bristles on antero-ventral surface from base to apex, and another on postero-ventral surface from base to beyond middle; hind tibia with two short antero-ventral setulae, two longer antero-dorsal bristles, and two postero-dorsal bristles, the lower one very long. Wings slightly pointed, third vein ending almost in apex; costal thorn very weak.

Female.—Differs from the male in having the anterior half of interfrontalia orange red, and the legs much paler, the femora being entirely reddish testaceous or with a slight darkening on the fore pair.

Eyes separated by about one-third the head-width; orbits about one-third as wide as interfrontalia, the bristles rather short, lower supraorbital directed forward; cruciate bristles present; cheek not higher than width of third antennal joint; palpi very broad, spatulate; mid and hind femora with fewer and much shorter bristles than in male. Wing less pointed than in male. Length, 4.5 to 5.5 mm.

Type.—♂; Alamogordo, New Mexico, April 30, 1902, [A. N. S. No. 6211]. *Paratypes*.—2 ♂, topotypical, April 30 and May 2, 1902; 1 ♀, Clouderoft, New Mexico, May 16, 1902; 1 ♀, Carr Cañon, Huachuca Mountains, Cochise County, Arizona, August, 1905.

This species resembles *Anthomyia pluvialis* Linné in markings of the abdomen, but does not belong to the same genus, having the propleura bare ventrad of humerus.

Pegomyia affinis Stein

1897. *Pegomyia affinis* Stein, Berl. Ent. Zeit., xliii, 286.

This species is usually found in caves or in holes in the ground frequented by mammals. In the collection there are six males and three females with the following data: Grizzly Peak, Berkeley Hills, California, March 24, 1908; Berkeley Hills, April 11, 1908; November 19, 1908, (? C. Fuchs); Alamogordo, New Mexico, (April 3) and May 8, 1902.

This species is the only one in the subfamily known to me that has bristles at base of the third vein. These bristles are very weak, and sometimes absent.

Pegomyia minuta sp. n.

Male.—Head yellowish testaceous; occiput gray, densely gray pruinose; face and facial orbits densely white pruinose, most noticeable when seen from in front; third antennal joint entirely black; arista black at base; palpi yellow. Thorax fuscous or brownish, densely gray pruinose, not vittate. Abdomen clay colored, apices of segments paler, each dorsal segment with a dark spot at base in center which does not extend to apex of segment; the hairs and bristles each with base surrounded by a black or brown dot; fifth sternite yellowish. Legs yellowish testaceous, the femora brownish on middle. Wings clear. Calyptra and halteres whitish.

Head large, in profile with frons slightly protuberant anteriorly; eyes separated by width across posterior ocelli; orbital bristles not carried to ocellar triangle; antennae not reaching beyond two-thirds of distance to mouth margin; third joint slender, not twice as long as second; arista nearly bare, third joint distinctly swollen at base for about twice the length of second joint; parafacial in profile nearly as wide as third antennal joint and half as wide as height of cheek, the latter about one-fourth as high as eye, with a single series of weak, black marginal bristles. Presutural acrostichals short and stout, four to five pairs; prealar bristle absent. Abdomen narrow, slightly depressed; processes of fifth sternite narrow, glossy, their apices rounded, surfaces with weak hairs except on apical third. Fore tibia with one weak posterior setula; mid tibia with one postero-dorsal and two posterior short bristles; antero-ventral surface of hind femur with a few widely placed short bristles; hind tibia with one antero-ventral, three antero-dorsal, and two postero-dorsal bristles. Costal thorn very minute; outer cross-vein almost straight; third vein ending in wing tip. Length, 4 mm.

Type.—♂; Alamogordo, New Mexico, April 14, 1902, [A. N. S. No. 6212].

This species is closely allied in *ruficeps* Stein and *rufescens* Stein. From both of these species it may be separated by the entirely black third antennal joint and the shape of the processes of the fifth abdominal sternite.

Pegomyia sp.?

There is a female in rather poor condition in the collection which closely resembles the preceding species. It agrees with *minuta* in color. The cruciate frontal bristles are absent, the tibial bristles are stronger, there is one on antero-dorsal surface of mid tibia and two on antero-dorsal surface of hind tibia.

Locality; Milbrae, San Mateo County, California, March 20, 1908.

Pegomyia bicolor Wied

1817. *Anthomyia bicolor* Wiedemann, Zool. Mag., i, 77.

Three females of this European species from California; two, Berkeley Hills, Alameda County, California, April 20, 1908; one, Redwood Cañon, Marin County, May 17, 1908.

The larvae feed in leaves of dock. The species has previously been reported from North America.

HAMMOMYIA R.-D.

There are several species of this genus in North America, only one of which is in this collection.

Hammomyia maculata Stein

1897. *Hammomyia maculata* Stein, Berl. Ent. Zeit., xlii, 228.

This species appears to be western in its distribution. I have seen it from Montana and Idaho. There are two specimens before me as follows: one male, Beulah, New Mexico, August 17 (H. Skinner), and one female, Clouderoft, New Mexico, May 24, 1902.

EREMOMYIA Stein

This genus is represented by two species in this collection.

Eremomyia apicalis Stein

1897. *Eremomyia apicalis* Stein, Berl. Ent. Zeit., xlii, 227.

The female of this species has not been described.

Compared with the male type, which is now before me, it differs in being much larger, ten millimeters in length, and more robust, the eyes are separated at vertex by a little more than one-third the head-width, the third antennal joint is slightly broader than the parafacial in profile, the palpi are slightly broadened and extend almost to apex of proboscis, the abdomen lacks the dorsal stripe, and the last section of fourth vein is as long as preceding section.

Locality; Cloudercroft, New Mexico, May 24, 1902.

There is one long hair on lower portion of each petropleura in this specimen, which is not present in the male nor in *humeralis* Stein.

Eremomyia depressa sp. n.

Male.—Black, slightly shining. Interfrontalia, face, and cheeks brownish, the orbits, face, and cheeks with white, almost silvery pruinescence; antennae and palpi entirely black. Dorsum of thorax with distinct whitish pruinescence, the disc when seen from behind with five black vittae, the median three narrow, the sublaterals broad. Abdomen with distinct grayish pruinescence on dorsum, and with a dorso-central black vitta which tapers slightly from base to apex. Legs black. Wings clear, veins black. Calyptra white. Halteres yellow.

Width of frons at narrowest point about equal to width across posterior ocelli; face buccate in profile; width of parafacials in profile distinctly greater at base of antennae than width of third antennal joint; becoming narrower below; cheek about twice as high as width of parafacial, the lower margin with four to five series of bristly hairs which become upwardly curved anteriorly and do not extend to vibrissal angle; vibrissa distinct, not very strong, with a number of bristly hairs at base and above it on facial ridge. Antennae shorter than face, third joint narrow, about one and one-half times as long as second, the latter with short dense hairs and three long slender bristles; arista distinctly swollen at base, densely pubescent. Thoracic dorsum with rather sparse, erect, moderately long hairs between the long, strong bristles; one pair of very long presutural acrostichals and three to four much weaker; posthumeral bristle duplicated and with a third, very long, hair lateral of it; prealar bristle about two-thirds as long as bristle behind it; pleura normal. Abdomen ovate, depressed; hypopygium small. Fore tibia with two posterior bristles; mid femur with one to two strong bristles on basal half of antero-ventral surface and four to five on basal half of postero-ventral; mid tibia with one antero-dorsal, one postero-ventral, and two postero-dorsal bristles, the lower one of the last two and both the others at nearly the same length from apex; hind femur with a series of rather widely placed strong bristles on whole length of antero-ventral surface, the postero-ventral surface with moderately long hairs, and two strong bristles at middle; hind tibia with six to eight antero-ventral, four to six antero-dorsal, and three to four postero-dorsal bristles, the posterior surface with four to seven slender bristles on basal half. Costal thorn indistinguishable, the costa with very short, dense, setulose hairs; veins 3 and 4 very decidedly convergent apically; outer cross-vein almost parallel to wing margin, very much curved. Lower calypter almost as large as upper. Length, 6.75 mm.

Type.—♂; Troy, Idaho, May 31, 1908, [A. N. S. No. 6213].

This species differs from any in this genus known to me in having the abdomen depressed, the cheeks with very conspicuous

hairs, which are not confined to margin but invade the cheek itself, and the bristles adjoining the vibrissa hair-like and not very numerous.

It is probable that this species will require to be placed in a new genus, but comparison of both sexes of the species involved is necessary to permit of a decision on this point, and only the male of *depressa* is available to me at this time.

HYLEMYIA R.-D.

I have dropped the very unsatisfactory genus *Phorbia* in this paper, because no separation of genera can be based upon the very unstable character of the hairing of the arista. If we accept the presence or absence of hairs on the arista as the distinguishing character for these and other anthomyiid genera, we undoubtedly obtain results which are neither satisfactory nor in agreement with natural relationships.

All the species I have described in this and other papers, and those already described or recorded by Stein from North America, have been incorporated in a key which I have in manuscript and hope to publish when I complete working over the material now on hand.

***Hylemyia antiqua* Meigen**

1826. *Anthomyia antiqua* Meigen, Sys. Beschri., v, 166.

There are four females in the collection which agree with specimens of this common, widely distributed species before me which were bred from onions near Chicago, Illinois.

Locality; San Francisco, California, (F. E. Blaisdell), one specimen, May 27, 1908, three specimens, August 7, 1908.

***Hylemyia fracta* sp. n.**

Male.—Black, slightly shining. Head black, interfrontalia, anterior half of parafacials, and the upper anterior portion of cheeks rufous; face, cheeks, and orbits with white pruinescence; antennae and palpi black. Thoracic dorsum with slight whitish pruinescence, which is most distinct on lateral margins, and between the acrostichals and dorso-centrals anteriorly; pleura whitish pruinose. Abdomen rather densely whitish pruinose, less pronouncedly so on posterior margin, each segment with a central black stripe, and the anterior margin black. Legs black. Wings clear, veins black. Calyptra white, margins yellowish. Halteres yellow.

Eyes separated by a little more than width of anterior ocellus; antennae distinctly shorter than face, third joint one and one-half times as long as second; arista with microscopic pubescence; parafacial in profile broader than

width of third antennal joint at base of antennae, becoming narrower below, cheek nearly twice as high as width of parafacial, margin with two to three series of long bristly hairs, which are upwardly curved on the greater portion of the series, vibrissal angle very slight, three to four bristles above vibrissa. Thorax with long hairs and bristles, the former not dense; three pairs of long presutural acrostichals; postsutural dorso-centrals three; prealar bristle a little over one-third as long as the bristle behind it; sternopleurals one: two. Abdomen rather strongly bristled; fifth sternite with slender processes, which are armed with a few moderately long bristly hairs on their discs. Fore tibia with one long posterior median bristle, the apex on posterior side with a long, strong downwardly directed, slightly forward, or upward curved bristle which is blunt at its apex as if broken off; mid femur with seven to nine closely placed, long, slender bristles on basal half of postero-ventral surface; mid tibia with five weak bristles, one antero-dorsal, two postero-dorsal, and two postero-ventral; mid tarsus less than two-thirds as long as mid tibia; hind femur with four to six bristles on apical half of antero-ventral surface, the postero-ventral surface unarmed; hind tibia with four to five short antero-ventral bristles, four to five slightly longer antero-dorsal bristles, interspersed on basal half with some setulose hairs, and three long postero-dorsal bristles, posterior surface with four to five setulose hairs on basal half; hind tarsus almost as long as hind tibia. Costal vein very thin to near apex of first vein; costal thorn very small; outer cross-vein oblique, slightly curved. Length, 6 mm.

Type.—♂; Clouderoft, New Mexico, May 26, 1902, [A. N. S. No. 6221].

This species runs down to *antiqua* Meigen in an unpublished key of mine, resembling that species in having a blunt spine at apex of fore tibia on posterior side and entirely black legs, but is readily separated by the more hairy cheeks, much longer and more widely spaced presutural acrostichals, longer prealar bristle, shorter mid tarsus, and the tibial chaetotaxy.

***Hylemyia facialis* sp. n.**

Male.—Black, slightly shining, densely gray pruinulent. Head black; orbits, face, and cheeks with dense white pruinescence, when seen from the side the orbit has an opaque testaceous yellow spot at base of antennae which becomes black below, and a blackish brown spot at lower angle of eye, which adjoins a yellowish mark on vibrissal angle of cheek; second antennal joint rufous; palpi fuscous. Thoracic dorsum with three narrow brown vittae. Abdomen with a median black spot on base of each segment on dorsum; processes of fifth sternite largely testaceous. Legs yellowish testaceous, coxae grayish; tarsi fuscous. Wings clear; junction of second and third veins, and both cross-veins conspicuously brownish. Calyptra white. Halteres yellow.

Eyes separated by width of anterior ocellus; orbital bristles on lower half

only; antennae reaching almost to mouth margin, third joint twice as long as second; arista with the longest hairs slightly shorter than width of third antennal joint; parafacials in profile slightly less than width of third antennal joint and less than half as wide as height of cheek, the latter with one to two series of marginal bristles; vibrissa above lower level of cheek. Thorax with three to four pairs of widely separated presutural acrostichals, between which there are no weak hairs; prealar bristle over one-third as long as the bristle behind it. Abdomen slightly flattened; fifth sternite with a pair of short, broad, apically truncated processes, the lower margins of which are armed with very closely placed, fine, short hairs, the apex less densely fringed; hypopygium rather large for a species of this genus, the sixth abdominal segment glossy black, contrasting sharply with the basal segment of hypopygium, both of them with long, strong bristles. Legs stout; fore tibia with one antero-dorsal and one postero-ventral bristle; mid femur with two to three short, weak bristles near base of postero-ventral surface; mid tibia with one antero-dorsal, two postero-dorsal, and two postero-ventral bristles; mid tarsus distinctly shorter than mid tibia; mid femur with four to six strong bristles on antero-ventral surface, the longest and strongest one near middle, the postero-ventral surface with one to two short, stout bristles near middle; hind tibia with two short antero-ventral, four unequal antero-dorsal, and three strong postero-dorsal bristles, posterior surface with an irregular series of six to nine short, erect, setulose hairs on basal half; hind tarsus very little shorter than hind tibia. Costal thorn very short; apex of wing rather acute, third vein ending almost in tip, fourth vein ending almost as far behind tip as second does in front of it. Length, 6 mm.

Type.—♂; Yosemite Valley, California, May 22, 1908. [A. N. S. 6214].

This species differs from others with pale legs known to me in having three infuscated areas on wings, in structure of the fifth abdominal sternite, and in chaetotaxy of the legs.

***Hylemyia alcathoë* Walker**

1849. *Anthomyia alcathoë* Walker, List, iv, 937.

There are nineteen specimens of this species in the collection as follows: two males, Redwood Cañon, Marin County, California, May 17, 1908; three males, Lagunitas Cañon, Marin County, California, March 29, 1908; two males and two females, Yosemite Valley, California, May 22, 1908; four males, Berkeley Hills, California, March 22, 1908; two females, same locality, April 20, 1908; two females, Mesa Grande, Sonoma County, California, May, 1908, (J. P. Baumberger); one female, same locality, June, 1908; one male, San Francisco, California, March 30, 1908, (F. E. Blaisdell).

***Hylemyia duplicata* sp. n.**

Male.—Black, densely gray pruinose. Orbits, face and cheeks with silvery pruinescence; frontal triangle rufous; antennae black, second joint brownish at apex; palpi black. Thoracic dorsum with three fuscous vittae. Abdomen with a fuscous dorso-central stripe. Legs ferruginous, coxae and a longitudinal stripe on postero-dorsal surface of fore femora fuscous. Calyptra white. Halteres whitish yellow. Wings clear, veins brown, cross-veins very faintly infuscated.

Eyes in type separated by distinctly less than width across posterior ocelli; orbits contiguous, obliterating interfrontalia for a considerable distance below ocelli; arista microscopically pubescent; parafacials as broad in profile as third antennal joint; height of cheek one-sixth that of eye; bristles on frons not carried beyond middle. Thorax with three strong pairs of presutural acrostichals; sternopleura with four bristles. Abdomen cylindrical; the forwardly directed apical processes of hypopygium slender, armed along their lower surfaces (when directed forward) with dense, very short, black bristly hairs (fig. 4); fore tibia with one antero-dorsal bristle, and one posterior; mid femur with two to three strong bristles on basal half of postero-ventral surface; mid tibia with one antero-dorsal, one postero-dorsal, and two posterior bristles; hind femur with a complete series of strong, rather widely spaced bristles on antero-ventral surface and two to three on postero-ventral at middle; hind tibia with one antero-ventral, two antero-dorsal, and two postero-dorsal bristles. Costal thorn shorter than inner cross-vein; outer cross-vein very oblique, distinctly bent.

Female.—Similar to the male in color, the anterior half of interfrontalia red.

Eyes separated by at least one-third the head-width at vertex, wider anteriorly; cruciate bristles absent. Fore tarsi normal. Length, 7 to 8.5 mm.

Type.—♂; Yosemite Valley, California, May 22, 1908, [A. N. S. No. 6215]. *Paratypes*.—3 ♂, 1 ♀, topotypical; 2 ♂, Redwood Cañon, Marin County, California, May 17, 1908; 1 ♂, 2 ♀, Berkeley Hills, California, April 20, 1908; 1 ♂, same locality, March 14, 1908; 1 ♂, Grizzly Peak, Berkeley Hills, California, March 23, 1908; 1 ♂, Clouderoft, New Mexico, June 19, 1902; 1 ♂, Beulah, New Mexico, June 28, 1902; 1 ♂, Troy, Idaho, May 31, 1908.

The series shows a considerable variation in size and color, the antennae being sometimes almost entirely black, and sometimes with the second and base of third joint rufous, while the palpi are black with pale bases or almost entirely pale. Two of the specimens from the type locality have the eyes closer together than the others and are in other respects slightly different, but the hypopygia of the males present no tangible distinctions and I consider them as merely variants. The mid tibia has sometimes a weak antero-ventral bristle.

Hylemyia substriatella sp. n.

Male.—Similar to the preceding species in color. The type specimen has the second antennal joint rufous and the palpi black. The cross-veins are very slightly clouded.

Structurally the species are similar but the mid tibiae have an antero-ventral bristle which is much stronger than that of the preceding species; the hind tibia has two antero-ventrals, and the hypopygium differs as shown in figure 3. Length, 8.75 mm.

Type.—♂; Falls Church, Virginia, October, [Coll. Illinois].

This species is added to facilitate comparison.

Hylemyia sp.?

Three female specimens of a species somewhat resembling *duplicata*, but differing in having the arista short-haired, the femora browned at middle, the outer cross-vein straight and almost erect, and the tibiae with more numerous bristles. The clouded cross-veins of this species separate it from most species of this genus.

Localities: Clouderoft, New Mexico, June 16, 1902; Alamo-gordo, New Mexico, May 5, 1902.

Hylemyia variata Flh.

1820. *Musca variata* Fallen, Dipt. Succ., Muse., 59.

This species occurs throughout Europe and North America, even as far north as Alaska.

Represented in this collection by two males from Berkeley Hills, Alameda County, California, April 11 and 20, 1908; one female, Redwood Cañon, Marin County, California, May 17, 1908, and one male, Troy, Idaho, May 31, 1908.

Hylemyia brevitarsis sp. n.

Male.—Black, shining; thorax rather indistinctly trivittate; abdomen with a broad black dorso-central stripe and poorly defined black posterior and anterior margins to segments. Calyptra white. Halteres yellow.

Eyes separated by more than width across posterior ocelli; parafacial in profile wider than width of third antennal joint; the latter less than twice as long as second; arista bare; cheek one-third as high as eye and higher than width of parafacial; proboscis rather slender. Thorax with long, but not dense hairs; three pairs of long presutural acrostichals present; prealar about half as long as the bristle behind it. Abdomen narrow, parallel-sided; fifth sternite shining, the processes broad, rounded at apices, almost bare on lower half, and with many long bristles on upper half. Mid femur with short bristly hairs on antero-ventral surface, those on postero-ventral very long and strong; hind

femur with long bristles on antero- and postero-ventral surfaces, those on the former more closely placed and much the strongest; fore and mid tibiae with or without a weak posterior bristle; hind tibia usually with three antero-dorsal and three postero-dorsal bristles, the lowest pair not much below middle; antero-ventral surface sometimes with one to two weak setulae; tarsi on all legs distinctly shorter than tibiae, the posterior surfaces of mid and hind pairs with short suberect setulose hairs. Costal thorn weak; outer cross-vein straight; apex of wing rather pointed, third vein ending almost exactly in tip. Length, 7 mm.

Type.—♂; Redwood Cañon, Marin County, California, May 17, 1908, [A. N. S. No. 6216]. *Paratypes*.—2 specimens; Lagunitas Cañon, Marin County, California, March 29, 1908.

This species bears a strong resemblance to *spiniventris* Coquillett, but the fifth sternite and chaetotaxy of the legs separate it from that species and its allies.

***Hylemyia neomexicana* sp. n.**

Male.—Black, subopaque, densely gray pruinulent. Head black, frontal triangle, face, greater portion of parafacials, and cheeks rufous; antennae, proboscis, and palpi black. Thorax without vittae. Abdomen with a moderately broad, black dorso-central vitta. Legs black, tibiae pale, reddish, but the specimen is slightly feneal and in mature examples the legs may be entirely black. Wings clear. Calyptra white. Halteres pale.

Eyes separated by about width of anterior ocellus; parafacials in profile about as wide as third antennal joint; cheek nearly twice as high as width of parafacial, marginal bristles long but not strong, in a single series, three to four on anterior half upwardly directed, vibrissa long; arista with the longest hairs about equal in length to basal diameter of arista. Presutural acrostichals long but irregular, two distinct pairs in type; prealar bristle minute or absent. Abdomen depressed, parallel-sided; hypopygium small; fifth sternite deeply cleft, the lateral processes not very long, armed with dense, short, erect bristly hairs on inner sides and with some discal bristles which become longer at apex. Fore tibia with one posterior bristle at middle; mid femur with a series of long bristles on basal half of postero-ventral surface; mid tibia with one antero-dorsal, two postero-dorsal, and two postero-ventral bristles; hind femur with a complete series of bristles on both antero- and postero-ventral surfaces, the former much stronger and longer than the latter; hind tibia with three postero-dorsal bristles, and long erect setulose hairs on all the other surfaces, the longest of which is almost twice as long as diameter of tibia; all tarsi slightly compressed, with the normal armature, the hind pair as long as tibiae. Costal thorn short; veins 3 and 4 subparallel apically. Length, 5 mm.

Type.—♂; top of Las Vegas Range, above Beulah, New Mexico, June 28, 1902, [A. N. S. No. 6217].

This species is allied to *Hylemyia* (*Phorbia*) *fusciceps* Zetterstedt, but differs in having more than one series of erect hairs on the hind tibia. There is another western species which is very closely related to *neomexicana*, the differentiating characters being enumerated below.

***Hylemyia cilifera* sp. n.**

Male.—Differs from the preceding species in color in having the head black.

The prealar bristle is nearly half as long as the one behind it; the fifth abdominal sternite is almost bare along the inner margins of the processes, but the discs of these are furnished with much longer and stronger bristles than in *neomexicana*; the armature of the legs is stronger than in that species and very nearly the same, the noticeable difference being that in *neomexicana* the antero-ventral series of erect hairs on hind tibia is nearly uniform in spacing and strength from base to near apex, whereas in *cilifera* the hairs become more widely spaced and distinctly stronger beyond middle, the last one being bristle-like and rather widely removed from the one basad of it. Length, 6.5 mm.

Type.—♂; Gallatin County, Montana, June 13, 1917, [Illinois].

***Hylemyia spiniventris* Coquillett**

1900. *Hylemyia spiniventris* Coquillett, Pro. Wash. Ac. Sci., ii, 449.

This species is represented by five males and nine females in this collection, all of which were taken at Beulah, New Mexico, June 28, 1902, on top of the range.

This species and the four following agree very closely in color, *spiniventris* differing noticeably in having the wings largely fuscous. The mid and hind femora are armed on the antero- and postero-ventral surfaces with strong bristles which are present on at least the basal half, and the hind tibiae are armed with very long bristles.

***Hylemyia marginella* sp. n.**

Male.—Black, slightly shining. Frons, orbits, face, and cheeks with whitish pruinescence. Thorax indistinctly trivittate, the spaces between vittae whitish pruinescent. Abdomen with a broad black dorso-central stripe, which is dilated anteriorly on each segment. Wings almost hyaline, fuscous at base. Legs black. Calyptra white. Halteres yellow.

Eyes separated by at least the width across posterior ocelli; head in profile the same as in *marginata* Stein; arista with the longest hairs not much more than as long as basal diameter of arista; parafacials in profile distinctly wider than third antennal joint and slightly over half as wide as height of cheek.

Presutural acrostichals irregularly four-rowed, weak, of moderate length, the outer two rows longest; prealar nearly as long as the bristle behind it. Abdomen about twice as long as wide, parallel-sided; fifth sternite with weaker but more numerous discal bristles than in *marginata*, the inner margin of each process with minute spinules which are very noticeably shorter than those of *marginata* (figs. 5 and 8); hypopygium differing from that of *marginata* in having the dorsal processes stout and blunt at apex (figs 10 and 11). Chaetotaxy of legs as in *marginata* but the bristles are longer and stronger.

Female.—Differs in color from the male in having the body less shining and not so deep black, owing to the presence of brownish yellow pruinescence. The head is entirely black, with the interfrontalia opaque, almost velvety black. The thorax and abdomen are less distinctly vittate than in the male, and the wings are paler at base.

Structurally and in chaetotaxy the species closely resembles *spiniventris* Coquillett and *marginata* Stein but the arista is much shorter haired than in either of these species. Length, 6.75 mm.

Type.—♂; Tennessee Pass, Colorado, July 24, 1917, (Aldrich), [Coll. Illinois]. *Paratypes*.—4 ♂, 6 ♀, Beulah, New Mexico, June 28, 1902, top of range.

A female from Redwood Cañon, Marin County, California, May 17, 1908, may be this species.

Hylemyia spinilamellata sp. n.

Male.—Similar to the last species in color.

Structurally similar to the preceding species, but differing from it in that the longest hairs on the arista are as long as the width of the third antennal joint, the eyes are a little closer together, the presutural acrostichals cover a narrower strip, the processes of fifth abdominal sternite are armed with longer stout spines on basal half of inner margin (fig. 7), and the hypopygium is entirely different (fig. 9).

Female.—Similar to the female of the preceding species, but having the arista with much longer hairs. Length, 6 to 7 mm.

Type.—♂; Silver Lake, Utah, July 10, [Coll. Illinois]. *Paratypes*.—2 ♀, Beulah, New Mexico. June 28, 1902, top of range.

This species is more closely allied to *marginata* Stein than to *marginella*, but the hypopygium is entirely different from that of *marginata* as shown in figures. The male has very short, regular bristles on antero-ventral surface of mid femora, which become shorter towards apex, whereas in the other species the bristles are very long and generally confined to basal half. The costal thorn is absent in type.

***Hylemyia piloseta* sp. n.**

Male.—Agrees in color with *marginella*.

Eyes separated by distinctly more than the width across posterior ocelli; arista with the longest hairs not as long as basal diameter of arista; parafacial in profile almost as wide as height of cheek. The armature of fifth abdominal sternite is similar to that of *marginata* and *spinilamellata* (fig. 6), but the hypopygium is distinctly different (fig. 12). The chaetotaxy of the legs is similar to that of the other members of this group, but the femoral bristles of mid and hind legs are longer and stronger on the ventral surface and form more nearly complete series than in the others. The outer cross-vein is more erect and much straighter than in any of the other species, especially *marginata*. Length, 7 mm.

Type.—♂; Corvallis, Oregon, April 26, 1908, [Coll. Illinois].

Paratypes.—1 ♂, Mary's River, Oregon, [Coll. Illinois]; Troy, Idaho, May 31, 1908.

Type and one paratype in the collection of Illinois State Natural History Survey, one paratype in the Academy of Natural Sciences of Philadelphia.

There are several more species closely allied to the foregoing in North America, some of which I have before me now. The species described by Johannsen as *Hammomyia setigera* is a *Hylemyia* very closely related to, if not identical with, *marginata* Stein. I have not seen *setigera*, but the description agrees more closely with *marginata* than with any species known to me and the hypopygia are very much alike.

***Hylemyia mimetica* sp. n.**

Male.—Black, shining. Face, orbits, and cheeks with slight whitish pruinescence. Thoracic dorsum indistinctly trivittate. Abdomen with the dorsum very conspicuously brownish gray pruinose, when viewed from behind with a broad black central line, when viewed from above and laterally the segments appear to be blackened on anterior and posterior margins; hypopygium glossy black. Legs black. Wings subfuscous. Calyptera white. Halteres yellow.

Eyes separated by a little more than width of anterior ocellus; parafacial in profile nearly as wide as third antennal joint at base of antennae, becoming much narrower below; cheek about one-fifth as high as eye; arista with the longest hairs slightly longer than its basal diameter. Thorax with three pairs of moderately strong presutural acrostichals, between which there are no weak hairs. Abdomen narrow, slightly tapered to apex, depressed; hypopygium small; fifth sternite with two narrow elongate processes, which are armed with soft erect hairs along their inner margins and to middle of disc, the hairs longer at bases of processes, but nowhere bristly. Fore tibia with

one weak antero-dorsal, and two stronger postero-ventral bristles; fore tarsus very slightly compressed, longer than tibia; mid femur with irregular bristles and hairs on antero- and postero-ventral surfaces, longest on basal half and especially on that of postero-ventral surface; mid tibia with one antero-dorsal, two postero-dorsal, and three to four posterior bristles, the latter in an irregular series; mid tarsus shorter than mid tibia; hind femur with a series of strong, rather irregular bristles on antero- and postero-ventral surfaces, those of the latter not continued to apex; hind tibia with five to seven uneven antero-dorsal, and three to four postero-dorsal bristles, the posterior surface with about nine strong, suberect, setulose hairs; tarsus shorter than tibia. Costal thorn short; outer cross-vein oblique, distinctly curved. Length, 4.75 mm.

Type.—♂; Cloudercroft, New Mexico, May 27, 1902, [A. N. S. No. 6218].

This species closely resembles one which I have described in a paper now in the press, from Alaska, but the latter differs in having one posterior hind tibial bristle, the wings yellowish, and in some minor details. Another closely allied species is described herewith.

***Hylemyia anthracina* sp. n.**

Male.—Similar in color to the preceding species, the thorax and abdomen more distinctly vittate, and the wings clearer.

Eyes separated by width across posterior ocelli; parafacials in profile broader than in *mimetica*, their width exceeding that of third antennal joint and nearly equal to that of cheek; arista pubescent, the longest hairs not as long as basal diameter of arista. Presutural acrostichals rather irregular, three to four pairs; prealar bristle more than half as long as the bristle behind it. Abdomen as in *mimetica*, but the fifth sternite with longer strong bristles especially at apices of processes, where in the type they are cruciate. Fore tibia with two posterior bristles; mid femur with a series of five to seven bristles to beyond middle of postero-ventral surface; armature of hind femur as in preceding species, that of hind tibia differing essentially in having five to seven very short posterior setulae on median third, none of which are longer than the diameter of tibia, whereas in *mimetica* the bristles are longer than the tibial diameter and extend from base to near apex. Venation as in *mimetica*, but the outer cross-vein is straight. Length, 5.25 mm.

Type.—♂; Hood River, Oregon, June 21, 1917, [Coll. Illinois].

This species is inserted here because of the close resemblance to *mimetica*, and its western origin.

***Hylemyia* sp.?**

One male in collection differs from any North American species known to me in having the acrostichals in front of suture nearly

in a single irregular series. It most closely resembles *anthracina* of those described in this paper, but the eyes are closer together, the arista has longer hairs, the prealar is very short, the hind tibial armature is different, and the wing veins are yellow.

Locality; Beulah, New Mexico, June 29, 1902.

***Hylemyia angustiventris* sp. n.**

Male.—Black, slightly shining, densely gray pruinose. Head black, interfrontalia, parafacials, and greater portion of cheeks reddish testaceous. Thoracic dorsum with three faintly indicated vittae, the median one most distinct, lateral margins more distinctly pruinose than disc. Abdomen with a shining, fuscous dorso-central vitta, which is of uniform width from base to apex. Legs brownish black, the hind tibiae paler. Wings clear. Calyptra white. Halteres yellow.

Eyes separated by not more than width of anterior ocellus; face concave in profile, the parafacial much narrowed at lower angle of eye; antennae almost as long as face, third joint less than one and one-half times as long as second; arista hairy, the longest hairs a little longer than basal diameter of arista; cheek about one-fifth as high as eye, anterior angle distinctly but not greatly produced, margin with short hairs and a few longer bristles, some of those near anterior margin upwardly curved; vibrissa long, a few weak hairs above it; proboscis stout. Presutural acrostichals weak, one to two pairs in irregular order; prealar bristle absent, only the usual bristles above fore coxae, and those weak. Abdomen narrow, about three times as long as wide, fourth (visible) segment longest; fourth sternite with three to five long downwardly directed bristly hairs on each lateral margin; fifth sternite without abnormal bristling. Fore tibia with two bristles, one antero-dorsal, and one postero-ventral; fore tarsus longer than fore tibia, but little compressed; mid femur with four to six bristles on basal half of postero-ventral surface; mid tibia with one anterior, one postero-dorsal, and two postero-ventral bristles; hind femur with four to five weak bristles on apical half of antero-ventral surface, the postero-ventral surface unarmed; hind tibia with two antero-ventral, four to six antero-dorsal, and three stronger postero-dorsal bristles, the posterior surface with a few setulose hairs on basal half. Veins 3 and 4 convergent at apices; outer cross-veins straight; costal thorn minute. Length, 4 mm.

Type.—♂; Cloudercroft, New Mexico, June 18, 1902, [A. N. S. No. 6219]. *Paratypes*.—1 ♂, topotypical, June 16.

This species resembles *linearis* Stein, but the latter has the eyes separated by nearly the width across the posterior ocelli, the prealar bristle more than half as long as the bristle behind it, the costal thorn longer than inner cross-vein; the whole disc of third sternite of abdomen with long, bristly, downwardly directed hairs, and the hind tibia with three long bristles on the antero-dorsal surface.

Hylemyia substriata Stein

1897. *Chortophila substriata* Stein, Berl. Ent. Zeit., xlii, 233.

One male which agrees in all particulars with the type, which is before me, bears data as follows: Berkeley Hills, Alameda County, California, March 22, 1908.

There are also two females which belong to this species from Cloudercroft, New Mexico, May 26, 1902.

Hylemyia sp.

This species closely resembles *substriata* Stein, but there are only one male and two females in poor condition in the collection, so that it is impossible to identify it accurately.

Locality; Bright Angel, Arizona, rim of Grand Cañon, 6880 feet, July 29 to August 2, 1906, (P. P. Calvert).

Hylemyia sp.?

One male, similar in appearance to the last one except that there is no strong pair of presutural acrostichal bristles. The hind tibiae in both of these species are rufous.

This species has the fore and mid legs glued to the point on which it is mounted, so that it is impossible to satisfactorily identify it.

Locality; Beulah, New Mexico, June 28, 1902, top of range.

Hylemyia curvipes sp. n.

Male.—Black, densely gray pruinose. Head black, frons, face, orbits, and cheeks with silvery pruinescence; antennae and palpi black. Thorax with three or five brown vittae. Abdomen with a black dorso-central stripe and the anterior margin of each segment narrowly black; hypopygium glossy black. Legs black. Wings clear, veins black. Calyptra white. Halteres dull yellow.

Eyes separated by a little more than width of anterior ocellus; parafacial in profile over half as wide as third antennal joint, width of the latter over half as great as height of cheek, marginal bristles of cheek in a single series anteriorly where they are upwardly curved; face vertical or almost so, one to two short hairs above vibrissa. Three pairs of presutural acrostichals present; prealar bristle less than half as long as the bristle behind it. Abdomen depressed, narrow; fifth sternite with a few, long, backwardly directed bristles on disc, each process rounded at apex, slightly chitinous, glossy, and with a stout, blunt, downwardly directed spine near apex on ventral surface. Legs slender, the hind femora very much curved; fore tibia with one to three postero-ventral bristles; mid femur with six to eight long bristles on basal half of postero-ventral surface; mid tibia with one antero-dorsal, two to three

postero-dorsal, and two to four postero-ventral bristles, the dorsal surface on apical half and dorsal surface of basal joint of mid tarsus each with long setulose hairs; anterior surface of hind femur with short, erect, setulose hairs, which become longer on apical half of antero-ventral surface; hind tibia with a series of erect setulose hairs on each of the following surfaces, antero-ventral, anterior, antero-dorsal, posterior, and postero-ventral, postero-dorsal surface with four widely placed slender bristles. Veins 3 and 4 convergent apically; outer cross-vein nearly straight. Length, 4 to 4.5 mm.

Type.—♂; Grand Tower, Illinois, April 21 to 23, 1914, [Illinois]. *Paratypes*.—1 ♂, topotypical; 2 ♂, Lafayette, Indiana, May 1, 1918, [Illinois].

This species bears a resemblance to *trichodactyla* Zetterstedt, but the hind femora are very much curved, and the armature of the hind tibiae is quite different.

Hylemyia fusciceps Zetterstedt

1845. *Aricia fusciceps* Zetterstedt, Dipt. Scand., iv, 1552.

The commonest and most widely distributed anthomyiid fly in North America. Represented by sixty-seven specimens from the following localities: Milbrae, Redwood Cañon, Lagunitas Cañon, Mesa Grande, Sonoma County, Yosemite Valley, and Berkeley Hills, all in California; Beulah, top of Las Vegas Range, Alamogordo, Highrolls, East Las Vegas, and Clouderoft, all in New Mexico.

Hylemyia sp.?

One female resembling in most respects that of *fusciceps* Zetterstedt, but with fewer antero-dorsal bristles on hind tibiae.

Locality; Huachuca Mountains, Arizona, August, 1905, (H. Skinner).

Subfamily FUCELLINAE

FUCELLIA R.-D.

There are two species of this genus in the collection. One of these is undescribed.

Fucellia assimilis sp. n.

Male and female.—Black, densely gray pruinosecent. Head grayish testaceous, becoming ochreous anteriorly, the entire face, anterior half of frons and the cheeks reddish testaceous; third antennal joint and proboscis black. Dorsum of thorax with three narrow brown vittae. Abdomen with a blackish brown dorso-central vitta; bases of setulae and bristles each surrounded by a black dot; fifth sternite testaceous in male. Legs black,

trochanters and tibiae reddish testaceous. Wings hyaline, in the male with a large brown mark extending on costa from slightly beyond level of inner cross-vein to apex of wing, filling nearly all the area from apex of fourth vein to costa and backward to near outer cross-vein; no such mark on wings of female. Calyptra white. Halteres yellow.

Male.—Head distinctly broader than thorax, and nearly twice as broad as long at center of frons; one pair of bristles on interfrontalia; each orbit with five bristles; antennae short, barely more than half as long as face, third joint rounded apically; arista bare; vibrissal angle midway between upper mouth margin and apex of third antennal joint; cheek nearly as high as eye, marginal bristles sparse and strong. Mesonotum with three pairs of presutural aerostichals; lower two sternopleurals about half as long as upper two. Hypopygium small, retracted; fifth sternite with a deep, broad, rounded central excision. Fore tibia with one antero-dorsal and one posterior bristle; mid tibia with one antero-dorsal and two postero-dorsal bristles; hind femur with three to four very widely spaced antero-ventral bristles on apical half; hind tibia with two to three antero-ventral, six to seven antero-dorsal, and three to four postero-dorsal bristles. Veins of basal half of wing weak, the costa noticeably so, especially between apex of auxiliary vein and apex of first; the strong costal spines on under side of costa present only from the beginning of the dark mark on wing to apex. Third and fourth veins parallel on apical portion.

Female.—Differs from male in having the head about equal in width to thorax, the orbits with six bristles, the wing venation normal, the costal thorn distinct; and the spines on costal vein present from a short distance beyond apex of first vein to apex of second. Length, 4.5 mm.

Type.—♂; San Francisco, California, August 7, 1908, (F. E. Blaisdell), [A. N. S. No. 6220]. *Allotype*.—Same locality, May 27, 1908, (F. E. Blaisdell).

This species is very similar to *apicalis* Stein, a Chinese species, but differs in color and chaetotaxy of the legs. Stein makes no mention of any peculiarity of wing venation in *apicalis* such as is described above.

Fucellia maritima Haliday

1838. *Halithea maritima* Haliday, An. Nat. Hist., i, (2), 186.

Two males and two females, San Francisco, California, August 7, 1908, and May 27, 1908, (F. E. Blaisdell).

This is the most widely distributed species in this country. I have seen it from the Gulf Coast in Texas, and various points on the Atlantic and Pacific coasts and have taken it on the Little Wabash River in Illinois and on the shores of Lake Michigan. The species occurs also in Europe.

EXPLANATION OF PLATE XVII

- Fig. 1.—*Xenaricia fulva*, genital segments of female, caudal view.
Fig. 2.—*Xenaricia fulva*, same, lateral view.
Fig. 3.—*Hylemyia substriatella*, hypopygium of male, lateral view.
Fig. 4.—*Hylemyia duplicata*, same.
Fig. 5.—*Hylemyia marginella*, fifth abdominal sternite of male, ventral view.
Fig. 6.—*Hylemyia piloseta*, same.
Fig. 7.—*Hylemyia spinilamellata*, same.
Fig. 8.—*Hylemyia marginata*, same.
Fig. 9.—*Hylemyia spinilamellata*, hypopygium of male, dorsal view, one side.
Fig. 10.—*Hylemyia marginella*, same.
Fig. 11.—*Hylemyia marginata*, same.
Fig. 12.—*Hylemyia piloseta*, same.